DOCUMENT RESUME

ED 406 971 IR 018 323

TITLE	Comprehensive Study of Educational Technology Programs Authorized from 1989-1992. Volume I: School-Based Educational Technology Grants.
INSTITUTION	Far West Lab. for Educational Research and Development, San Francisco, Calif.
SPONS AGENCY	California State Dept. of Education, Sacramento. Office of Educational Technology.
PUB DATE	20 Dec 91
NOTE	142p.; For volumes II-VI, see IR 018 324-328; for the 1984-1992 study (phases I-IV), see IR 019 319-322; for the 1984-1992 summary report, see ED 348 951.
PUB TYPE	Reports - Research (143) -- Tests/Questionnaires (160)
EDRS PRICE	MF01/PC06 Plus Postage.
DESCRIPTORS	Case Studies; Computer Software; Computer Uses in Education; *Educational Technology; Elementary Secondary Education; Evaluation Methods; Formative Evaluation; Instructional Materials; Interviews; Measurement Techniques; *Program Evaluation; Program Implementation; Questionnaires; School Surveys; State Programs; Summative Evaluation
IDENTIFIERS	*California Educational Techn Assessment Prog; Technology Integration

ABSTRACT

This report, the first in a series of six, was developed during Phase II of California's Educational Technology Programs. School-based educational technology projects that were assessed for the study were funded in 1989-90 and implemented in 1990-91. The results from the following staff-developed assessment instruments and evaluation procedures are presented in this report: (1) School-Based Grant Self-Assessment Inventory; (2) student surveys; (3) teacher surveys; (4) interview inventories; (5) case studies; (6) School Profile Page of each project applications; (7) California Technology Project (CTP) Self-Assessment Inventory; (8) Instructional Television (ITV) Self-Assessment Inventory; and (9) Level II and Level I Model Technology School Project Self-Assessment Inventories. A three-tiered plan was used for data collection as follows: Tier One--survey assessment of all schools funded during Phase I (285 sites returned completed surveys); Tier Two--in-depth assessment of a representative sample of 30 school-based projects; and Tier Three--case studies of 11 selected projects. A Profile of the First Phase of School-Based Technology Grant Projects is appended together with copies of the evaluation instruments used. Findings from the Self-Assessment Inventories, telephone interviews, teacher and student surveys, and visitations to 12 school sites are summarized according to planning; content; implementation and staff development; support resources; funding support; supporting and implementing factors; cost benefits; and outcomes. Recommendations for planning, funding, staff development, evaluation, and dissemination are also included. (AEF)

Reproductions supplied by EDRS are the best that can be made
from the original document.

Far West
LABORATORY

ED 406 971

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Comprehensive Study of Educational Technology Programs Authorized from 1989-1992

Volume I

School-Based Educational Technology Grants

December 20, 1991

Submitted to:
California Department of Education
Office of Educational Technology
721 Capitol Mall, 3rd Floor
Sacramento, CA 95814

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
T. Ross

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

IR018323

BEST COPY AVAILABLE

Far West Laboratory for Educational Research and Development
730 Harrison Street. San Francisco. CA 94107-1242 (415) 565-3000

Comprehensive Study of Educational Technology Programs Authorized from 1989-1992

Volume I

School-Based Educational Technology Grants

Project Director
John Cradler

Project Consultants
James S. Eckenrod
Lynda Greene
Vicki Lambert

Data Analysis and Desktop Publishing
Dan Cradler
Kerrie Evans

December 20, 1991

Submitted to:
California Department of Education
Office of Educational Technology
721 Capitol Mall. 3rd. Floor
Sacramento, CA 95814

Contents

School-Based Educational Technology Grants Program Overview 1
- I. Background Information 1
- II. Program Planning and Development 2
- III. Program Application Guidelines and Fiscal Provisions 5
- IV. Plan for the Intensive Study of 321 School-Based Educational Technology Projects 8

Self-Assessment Inventory Results 13
- I. Background Information 13
- II. Planning 15
- III. Project Content 19
- IV. Project Implementation 23
- V. Support Resources 27
- VI. Funding Support 29
- VII. Supporting and Impeding Factors 31
- VIII. Project Outcomes 34
- IX. Recommendations 39

Student Survey Results 45

Teacher Survey Results 51
- I. Background 51
- II. Access and Use of technology 51
- III. School Use of Technology and Benefits 51
- IV. Student Impact 52
- V. Teacher Impact 53
- VI. Support Resources 53

Telephone Interview Results 57

School Site Visitation Findings 73
- I. Background Information 73
- II. Planning 75
- III. Content 75
- IV. Project Implementation 76
- V. Project Support Resources 77
- VI. Funding Support 78
- VII. Supporting and Impeding Factors 79
- VIII. Project Outcomes 80

Summary and Recommendations 85
- I. Summary of Findings 85
- II. Recommendations 87

Profile of First Phase of School-Based Technology Grant Projects .... Appendix A

Instrumentation .... Appendix B

School-Based Educational Technology Grants

I. Background

The lessons learned from the assessments of the Assembly Bill 803 Adoption/Expansion Grants Program were considered in designing the AB 1470 School-Based Educational Technology Grants Program. (For a review of the AB 803 Adoption/Expansion Grants Program see Phase I of this study.) The School-Based program that replaced the AB 803 program incorporates many of the suggestions provided by educators who worked closely with AB 803, the California Department of Education (CDE) staff, and the Sunset Report of the Office of the Legislative Analyst.

A significant change between AB 803 and AB 1470 was that the School-Based Educational Technology Grants added the requirement of a Technology Use Plan (TUP), a school-based plan for technology use that is integrated into an existing school plan. It was found that district plans required under AB 803 had little or no impact on school change because they were written and approved in isolation from school sites and therefore were filed and seldom used. Other changes from AB 803 include: 1) an increase from 10 to 20% for district matching, 2) allocation of at least 10% of the grant for staff development, 3) a description of the process for ensuring alignment with the California Curriculum Frameworks, 4) the inclusion of a process to facilitate the better management of learning resources, and 5) the basing of funds on the number of pupils served rather than the grade levels served by the project.

Legislative Authority: AB 1470 (Chapter 1334, Statutes of 1989) reauthorized and expanded the Educational Technology Local Assistance Program and provides for several different types of local assistance grants, including the School-Based Educational Technology Grants. In approving AB 1470, the Legislature found and declared that :

> *"Educational technology is a valuable tool to improve and expand instruction to meet the evolving needs of California pupils. It offers benefits to all levels of education, and to students at all levels of ability and in all geographic regions. Representatives from all educational levels, along with representatives of the business community should be involved in planning and establishing policy for the application of educational technology. Further, instructional technology uses should be developed, implemented, and evaluated at the school level with district, regional, state, and private sector support. Resources should be identified and utilized that will improve staff development programs in applications of instructional technology. And finally, the program should encourage sensitivity to the need for equity of access to educational technology for all pupils, while allowing for targeted uses of technology by grade, subject area, or for students with special needs."*

Major Goals: The goals of the Local Assistance Program are based on the intent of the legislation combined with the educational planning and curriculum goals established by the CDE. The attainment of these goals was assessed to assist in determining the state-wide impact of the Local Assistance Program. As stated in the Application Forms, the major goals of the School-Based Educational Technology Grants component of the Local Assistance Program are to:

- Improve the quality and effectiveness of instruction and learning through the use of technology.
- Increase the use of coordinated school level planning for the utilization of technology.
- Ensure that school-level technology use is articulated with district programs and planning.

- Facilitate integration of technology into the school curriculum aligned with the state frameworks.
- Increase the effective management of learning resources through access to and use of technology.
- Evaluate the impact of technology on teaching, learning, planning, and resource utilization.

II. Program Planning and Development

School-Based Technology Use Planning: One of the major areas of emphasis for the School-Based Grants program is on the development of a TUP as described in the School-Based Grants RFP. The concept of the TUP evolved from the California Business Roundtable in its report titled *Restructuring California Eduction* (1988). It was the Roundtable that advocated the incorporation of the TUP into the language of AB 1470. The Roundtable report stated that:

> *"There was generally limited school site planning in which to frame technology purchase and use decisions. . . decisions of individual teachers or districts are rarely coordinated with School Improvement Programs, staff development plans or curriculum revisions. The integration of TUPs into the ongoing instructional planning at each school could encourage and facilitate the natural development of school-based resource planning. After the TUPs were developed, successive updates and revisions would become a part of the ongoing school development planning cycle."*

To accomplish the integration of technology into school site planning, AB 1470 requires "the development of a Technology Use Plan that is to become part of (currently) existing school-based planning procedures." The intent of this requirement is to ensure that the uses and implementation of technology in schools occur according to carefully developed plans which emphasize that the role of technology is to strengthen, support, and improve curriculum and instruction, rather than to be an end in itself.

The TUP should be an integral part of the existing school plan, such as a School Improvement, School-Based Coordination, or School Development Plan. The Technology Use Plan describes how technology is or will be used within the school plan. Most K-8 schools have, or are developing, School Improvement Plans. High schools are developing School Development Plans to implement school-based staff development programs (SB 1882). These school planning procedures are clearly described in the documents, *Quality Criteria for Elementary, Middle, and High Schools: Planning, Implementation, Self-Study, and Program Quality Review,* 1989, and may be obtained from the California Department of Education, Bureau of Publications.

If schools do not have a school plan, they must develop a Technology Use Plan to integrate technology resources into the school-wide program. The School-Based Educational Technology Grant application must address one or more priorities for technology use as specified in the Technology Use Plan. Schools were given the following TUP development process as recommended in the state guidelines:

School-Based Planning Steps for Technology Use Plan and School-Based Educational Technology Grant Development

Development of the Technology Use Plan and the School-Based Educational Technology Grant must "involve the school site council and other appropriate school-wide advisory groups, to include site administrators, teachers, support personnel, and parents" (EC 51874.2.). For this reason the following steps are advised for planning, developing, implementing, monitoring, and evaluating a school-based technology project. Carefully read the following instructions, follow the proposed planning process and then complete the narrative according to the application instructions provided in the next section. The principal and others involved in planning for an Educational Technology grant should schedule a meeting of the School Site Council or other appropriate school-based planning committee to do the following:

1. Inform and request the assistance and support of the School Improvement district coordinator (and/or business office) and school resource staff (if available).
2. Meet and review the AB 1470 guidelines for development of a School-Based Educational Technology grant with the School Site Council or school-based planning committee.
3. Review the Self Study, Program Quality Review Report of Findings, School Performance and WASC reports, and other relevant information, to determine needs for restructuring or expansion with consideration of the application of technology.
4. Review the existing uses of technology and media resources at the school and their relationship to the goals and objectives of the existing or emerging School Improvement Plan.
5. Identify specific areas where the existing technology and/or new acquisition of technology and media resources could support, enhance, or expand the School Improvement Plan.
6. Update the overall school plan to include a component(s) to describe the use and coordination of existing, as well as planned technology and media, within all appropriate and desired components of the existing plan. These technology-focused components of the school plan shall be known as the schools Technology Use Plan. Because it is part of the school plan, the Technology Use Plan is not to be developed as a separate plan. It serves to describe how technology will be used to augment or enhance the existing school program. The format for the Technology Use Plan component(s) format should be consistent with that of the existing School Improvement Plan or other school plan formats.
7. Establish the priority of technology use within the overall school plan as a means to improve or enhance the school program. Establish a focus for the possible development of an Educational Technology Grant project to support the needs prioritized within the school plan.
8. Decide whether or not the potential technology use justifies the development of an AB 1470 School-Based Educational Technology grant application. Depending on the scope of the proposal, the School-Based Educational Technology Project may address part or all of the elements of the school Technology Use Plan.
9. Review and discuss potential projects for educational technology, or develop new ideas for technology-based program improvement.
10. If it is clear that there is sufficient interest and commitment from the school staff and the principal to provide the time, resource management, matching requirements, monitoring, review, and evaluation needed for the proposed plan, then carefully follow the enclosed instructions for completing the School-Based Educational Technology Grant application.
11. If the project is funded, the school site council or planning committee would provide the support and monitoring of the project as it is implemented. The School-Based Educational Technology proposal is to be viewed as a part of the overall school plan and should be developed, implemented, monitored, and evaluated within the context of the school improvement, school development or other existing or emerging school-based program or plan.

Project planning and development components: When developing a plan, educators are required to address several areas of emphasis as stressed by the legislation and the CDE. These are Learning Resources Management, Curriculum Alignment, Staff Development, and Evaluation.

Curriculum Alignment: AB 1470 projects must support and be aligned with the state curriculum frameworks. In addition, school-based projects should be reviewed for alignment with the quality criteria for elementary grades, middle grades, and high school grades. These quality criteria are based upon the frameworks and are the basis for the Program Quality Review (PQR) process as well as ongoing school planning and implementation procedures. The school team and others to be involved in the development of AB 1470 School-Based Educational Technology Grants should be familiar with the state curriculum frameworks, the quality criteria, and their school's planning process before preparing the proposal.

Learning Resources Management: Often instructional technologies and related staff development programs are not efficiently used or even accessible to those who need them. For this reason, applications for grants under AB 1470 must also describe plans for improving the management and coordination of new and existing learning resources. Learning resources include such items as curriculum frameworks, textbooks, instructional materials, software and video guides, library and media materials, and instructional television program directories and guides.

The School-Based Educational Technology Grants Program encourages schools to show how staff will become informed about learning resources relevant to the implementation of the project and how learning resources will be coordinated and managed for optimal use by school staff. Schools are expected to identify and coordinate the targeted use of existing and new learning resources toward the implementation of the objectives established for the School-Based Educational Technology Grant and the Technology Use Plan. Projects are expected to identify what resources are going to be utilized, by whom and for what purpose and who will manage the use of these resources. School leadership and the planned assignment of staff who will play a major role in improving the management of learning resources should be a priority in the proposed plan.

Staff Development: Under AB 1470, all local technology use plans must include a staff development component. A minimum of 10 percent of total grant funds received by a local educational agency are to be utilized for staff development activities. Criteria for screening grant applications for educational technology local assistance program funds include an assessment of the extent to which staff development is needed for successful implementation of project activities. Schools are encouraged to use local or regional staff development resources. Finally, schools are required to evaluate the staff development resources used including their effectiveness in facilitating the implementation of the project.

Evaluation: The Legislature mandated stringent evaluation requirements for the AB 1470 programs. The grant application guidelines stated that "The proposed project describes an evaluation plan that utilizes, as appropriate, ongoing school level evaluation strategies (such as 'Program Quality Review' and 'Self-Study' procedures) and strategies to measure the outcomes of the program." Each School-Based Educational Technology proposal must "contain a method of evaluating resulting changes in teaching and pupil academic performance or other appropriate pupil skills" [EC. 51874.6.(4)]. At the end of the project period of the educational technology grant, the grant recipient is required to submit an evaluation report based on the evaluation goals included under Article 51876.5 of AB 1470 which includes the following:

- Describe how project outcomes will be assessed.
- Identify factors that restrict the most effective use of educational technology.
- Assess the extent to which staff development resources are made available.
- Evaluate the effectiveness of staff development resources to facilitate successful project implementation.
- Assess the management of school learning resources.
- Evaluate and report on changes in pupil academic performance and/or other outcomes.
- Utilize assessment criteria consistent with the quality criteria for elementary, middle, or secondary grades and the procedures established for Program Quality Review.
- Include procedures for documenting "unanticipated" outcomes.

III. Program Application Guidelines and Fiscal Provisions

The School-Based Educational Technology projects to be assessed for this study were funded in 1989-90 and were implemented during 1990-91. For this reason, information about the application process will apply to 1990-91. However, few changes were made in the subsequent cycles of school-based grant funding. In fiscal year 1989-90, $6 million was allocated. Currently, 1991-92 funds for School-Based Grant applications are being distributed by the CDE.

Types of Grants Allowable: School-Based Educational Technology Grants must directly or indirectly impact the instructional program. These grants are intended to be school-based applications of technology that are planned and developed in coordination with other resources available in the school (school improvement, staff development, mentor teachers, classroom teacher mini-grants, ECIA Chapter I, etc.) and meet locally defined educational needs.

The following types of projects may be funded by AB 1470:

- Planning and developing new applications of technology
- Expanding existing applications of educational technology
- Adopting or adapting existing educational technology programs or projects

Regional Allocations of Funds: To ensure that funding will be distributed equitably across the state, a percentage of available funds was allocated to each of the 10 county superintendents of schools service regions as shown in the table below. The percentage was determined by using the latest student enrollment for each region divided by the state's total enrollment. Competition for grant awards is on a regional basis. Table 1 shows the regional distribution of funding.

Table 1. AB 1470 Cycle 1 Regional Allocations

Grant Amount= $6,000,000 (FY 1989-90)
Enrollment=4,618,120

Region	ADA	% State ADA	Allocation
1	105,688	2.29%	137,313
2	90,379	1.96%	117,423
3	277,903	6.02%	361,060
4	538,666	11.66%	699,060
5	323,219	7.00%	419,936
6	177,095	3.83%	230,087
7	279,874	6.06%	363,621
8	1,632,827	35.36%	2,121,418
9	746,155	16.16%	969,427
10	446,314	9.66%	579,865
TOTAL	4,618,120	100.00%	$6,000,000

Level of Funding: Funding was allocated to each applicant at a base of $2,000 per school site with an addition of $25 per pupil to be served by the project.

Applicants were notified that "receipt of AB 1470 funding could potentially have an effect upon the receipt of Supplemental Grant funds. " (Refer to the Program Advisory CIL: 89/9-2 dated October 12, 1989 for additional details.) Applicants were urged to consult with district business managers before preparing grant applications.

Multi-School Consortia Funding: The CDE established a procedure whereby schools could join together and establish a consortium to apply for a multi-school grant if desired. The maximum amount for a multi-school grant was set at $115,000. Participating schools in a multi-school grant must prepare and document the existence of *Technology Use Plans* to be integrated into each school's existing overall educational plan. Multi-school proposals were required to describe how each school would participate in the overall project. Multi-school grant applications were encouraged for small schools where combining resources would reduce duplication and improve efficiency and access to resources for students and staff.

Matching Allocations: AB 1470 authorizes grants which require a 20 percent matching of funds provided by the school district. As specified in E.C. Section 51874.6(b), "of the 20 percent local share, up to one-half may be provided from in-kind contributions, and the remainder from local funds." The use of matching funds must be directly related to the planned program and be explained in the application narrative. The proposed "match" may only include expenditures that constitute specific allocations of funds.

Eligibility: School districts or county offices of education "which provide direct instructional services to students" are the only local education agencies eligible to apply for these grants. Each school or program must have a County-District-School Code to be eligible. Schools that are receiving AB 1470 school-level grant funds such as Level I or Level II Model Technology Schools Projects, are not eligible for School-Based Educational Technology Grants.

Assurances Required by Each Local Education Agency: The law specifies that each school, in order to be eligible to apply for these grants, shall have prepared a school level *Technology Use Plan* which is an expansion of the overall school level planning and is consistent with district instructional planning. While a district *Technology Use Plan* is not required, it is advisable and should support the school level *Technology Use Plan*. Each local education agency applying for a School-Based Educational Technology Grant must agree to the following special assurances:

1. The school or county program has either amended its School Improvement Plan or other school or program planning document to incorporate the appropriate use of technology, as a Technology Use Plan component that supports the goals and objectives of the school or program or has developed a new Technology Use Plan.

2. The school-based plan for technology use is coordinated with other programs and is consistent with district instructional and technology use planning.

3. The expenditure of matching local education agency funds is approved by the local governing board in an amount equal to at least 20% of the grant award requested. At least half of the local education agency funds must be direct funding. The remainder may be "in kind."

4. The applicant must allocate a minimum of ten percent of the approved grant award for staff development.

5. The grantee will submit an evaluation and expenditure report within thirty days of the termination of the grant.

Other special and general assurances were listed in the application.

Application Procedures: The CDE, with the assistance of reviewers, selected state-wide, was responsible for receiving, reviewing and rating applications. Reviewers used the same criteria to rate all applications. These categories for the specific criteria are listed below with the assigned point values:

Narrative Outline

Section	Value
1. Technology Use Plan	10
2. Needs Addressed	10
3. Project Description	15
a) Project plan overview	
b) Curriculum and Instruction	
c) Staff Development	
d) Learning Resources	
e) Additional Project Components	
4. Expected Outcomes	15
5. Activities	15
6. Evaluation	15
7. Project Management	10
8. Budget Description	10
Total Points Possible	100

Applicants were provided with the detailed project review criteria including a set of writing prompts and a format to guide responses to correspond to the criteria. This served as the basis for organizing the 10 page program narrative. The final application included a cover page, assurance pages, a narrative of the proposed plan, a line-item budget, and a completed *School Profile*. The *School Profile* served as a checklist to gather detailed information about school demographics, technology use and access, type of planning, curriculum emphasis and other details about the proposed project.

Each application submitted to the CDE was critiqued by three reviewers. Reviewers consisted of approximately 200 educators who volunteered to read projects for four days. The CDE, with the assistance of the California Technology Project Central Office and its 14 regional consortia, identified and trained educators to conduct the reviews. Projects were each scored according to established criteria. Scores were ranked from high to low with respect to the 10 regional allocations. Sufficient budget was available to fund 321 of the 1670 proposals submitted during the first cycle of the proposal grants.

The CDE, based on procedures approved by the SBE, prepared a list of all acceptable applications in rank order for each of the 10 regions. These lists were submitted to the Educational Technology Committee for review and possible approval with a recommendation to the SBE for funding.

***Support Resources to Grant Applicants**:* A variety of resources were, and still are, available to applicants for AB 1470 School-Based Educational Technology Grants. Four of these resources are: the California Technology Project, Instructional Television Agencies, Academic-Technology Model Programs (Level II, Model Technology School Projects), and Level I Model Technology Schools. Some of the resource agencies, depending on their funding, were able to provide assistance only on a fee-for-services basis or would broker services from private consultants.

California Technology Project: The California Technology Project (CTP) provides regionally-based assistance in administering the Educational Technology Local Assistance Program. Each California Technology Project regional consortium has a coordinator who works in close cooperation with the Office of Educational Technology in the CDE. Other agencies, such as county offices of education, Instructional Television Regional Agencies, other regional consortia and larger school districts, also provide regional training and assistance.

California Technology Project regional consortia conduct AB 1470 orientation seminars for interested local education agencies in their regions. Recognizing that many schools need assistance with their technology use planning, the CTP regional consortia also provide planning assistance to interested local education agencies participating in the consortium.

The CTP developed an AB 1470 electronic conferencing system whereby applicants could access information and have questions answered over the Technology and Resources in Education (TRIE) service on CSUNet. TRIE also included electronic versions of the AB 1470 application forms and various instructions and guidelines provided by the CDE. Information about the Model Technology Schools and other programs and practices available for adoption were also available from CSUNet.

Some of the consortia developed specialized services for project developers. For example, the El Camino CTP Consortium established an AB 1470 telephone helpline which was used frequently by grant applicants. Several consortia provided specialized workshops and assistance on developing a Technology Use Plan. Others sponsored seminars on how to adopt or adapt both Level I and Level II Model Technology Schools Projects as part of the AB 1470 Grant. Support of AB 1470 applicants was a major service of the CTP and its 14 regional consortia.

Instructional Television Regional Agencies: Seven Instructional Television (ITV) Regional Agencies also receive grants to provide support services to local education agencies in their regions. In general, the ITV Agencies provide advice with regard to available instructional television programming and offer staff development seminars to help teachers make better use of instructional television programs and support materials. Districts were urged to contact ITV Directors to obtain additional information and to request assistance.

Model Technology Schools Projects (Level II): Six Model Technology Schools Projects (Level II) have been funded for dissemination with AB 1470 funds. These projects have developed successful models of both instructional strategies which reflect their respective curriculum frameworks and the effective use of technology in instruction. They are funded to make other California educators aware of their programs and services, to maintain demonstration sites for visitations, and to assist other schools in determining whether their priority needs can be met by adopting the strategies of the model program. They conduct regional awareness and AB 1470 School-Based Grant planning sessions in conjunction with the CTP Regional Resource Consortia personnel. The costs of staff development, materials, and technical assistance are the responsibility of the adopting agency. Brief descriptions of each program were provided in an attachment to the grant application.

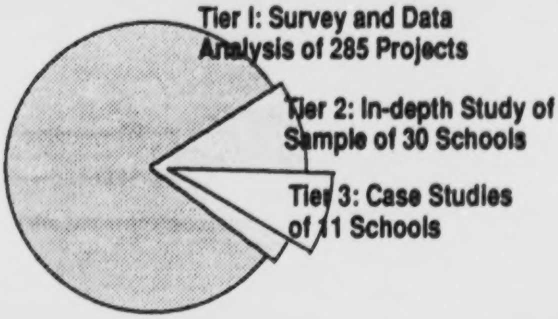
Model Technology Schools (Level I): These Model Technology Schools, consisting of six research and demonstration projects, are designed to provide information about carefully researched procedures, planning approaches, and practices for implementing educational technology. The projects are available for visitation on scheduled days. The Model Technology School Projects disseminated specific adoptable or adaptable "packages" or "products" in the 1990-91 school year. Some of the practices emerging from these projects were adopted in several of the School-Based Grants.

IV. Plan for the Intensive Study of 321 School-Based Educational Technology Projects

Methodology: The project staff developed several assessment instruments and evaluation procedures which were pilot tested, reviewed by CDE staff, and revised before being administered. The data sources are each explained within the three tiers of this component of the study. In general, data was collected from: 1) the *School-Based Grant Self Assessment Inventory*, 2) teacher surveys, 3) student surveys, 4) interview inventories, 5) case studies, 6) School Profile Page of each project application, 7) *CTP Self Assessment Inventory*, 8) *ITV Self Assessment Inventory*, and 8) *Level II* and *Level I Model Technology School Project Self Assessment Inventories*. The instrumentation development and validation process occurred from October of 1990 through February of 1991 with administration taking place during the spring of 1991. The details of the administration of each of the assessment procedures are described in the three-tiered plan as follows:

- Tier One: A survey assessment of all schools funded during Phase I. Surveys were returned by 285 of the 367 sites (78%).
- Tier Two: In-depth assessment of a representative sample of 30 school-based projects.
- Tier Three: Case studies of 11 selected projects

Figure 1: Tiers of Study for 1989-90 School-Based Educational Technology Grants



Tier 1. Study of all School-Based Projects: This tier provides an overview assessment of the projects funded from the 1990-91 budget. Data sources included: 1) the *School-Based Educational Technology Project Self Assessment Inventory* completed by each project, 2) the *School Profile Page* from the project application form, 3) completed project application forms, and 4) the CDE Office of Educational Technology.

The *School-Based Educational Technology Grants Self-Assessment Inventory* is a 32-page questionnaire that included open-ended, multiple choice, and Likert scale items divided into the following 10 categories:

I. Background Information
II. Planning
III. Content
IV. Implementation
V. Support Resources
VI. Funding Support
VII. Supporting and Impeding Factors
VIII. Outcomes
IX. Self-Assessment Summary
X. Recommendations

The *School-Based Educational Technology Project Self-Assessment Inventory* was completed and mailed to all of the 367 sites. The *Inventory* served as both a major data source for this study and satisfied the evaluation requirement established by the CDE for School-Based Educational Technology Projects. This provided an additional incentive for project staff to complete the survey. The data from the inventory corroborates the information gathered from the Tier 2 study of 30 school-based project sites as well as information gathered from other components of the evaluation.

The *School-Based Educational Technology Grant Application*, including the *School Profile Page* provided the data used for the profile assessment of the implementation of the program. This information was contrasted and compared with the information collected from the *Inventories* to determine continuity between what projects planned to accomplish and what was actually accomplished. The findings of the assessment of the grant application are included as Appendix B of this report.

Tier 2. Intensive Study of a Sample of Projects: Based on the criteria described in the original plan, a sample of 30 schools was selected for study. Demographic criteria including grade levels, funding levels, and geography were applied to schools in order to obtain a representative cross-sample. The project leaders for each of the 30 sites were given standardized interviews. The standard interview form is included in Appendix A. Interviews were intended to assess staff perceptions of planning, implementation, curriculum alignment, attainment of objectives, evaluation implementation, resources used, funding, impact on other projects, and recommendations. The interviews were conducted by a professional interviewer.

A representative sample of teachers and students at each of the 30 sites completed a survey to assess: perceptions of technology; access, adequacy and use of technology resources; school benefit; student impact; teacher impact; support resources, and the impact of technology and the project on student grades. Across the 30 sites, 500 teacher surveys were distributed with 319 (70%) returned. Of the 700 student surveys distributed across the 30 sites, 523 (70%) were returned.

The original plan called for the collection and aggregation of CAP *Survey of Basic Skills* school level scores. Since CAP testing was discontinued by the state, CAP scores were not available for 1990-91.

Tier 3. Case studies of selected projects: The original plan suggested a sample of 6 projects to be developed into case studies. The revised plan has been expanded to include 11 sites as follows: 6 reporting adaptations of Level II MTS Projects, and 5 projects reporting little if any connection to a Level II MTS Project. Case study sites were selected to represent a cross sample using demographic criteria including grade levels, funding levels, and geography. The case studies depict what teachers and students are actually doing to implement the project. Each case study includes a historical perspective of where students and teachers were before the project, where they currently are, and issues to be addressed in the future. Classroom observations conducted by the evaluators are used as illustrations to provide qualitative data to amplify and expand upon the quantitative information gathered by the surveys and self-assessment inventories. Information from the case studies is integrated into the report, as appropriate, to illustrate particular findings.

The chart below lists each of the major evaluation questions of the study and indicates the source used to answer each of the questions. Each of the evaluation instruments used to assess the School-Based Grants Program are included as Appendix A. The level of emphasis refers to the extent to which each data source addresses each question.

Instrumentation Matrix: 1.0 School-Based Educational Technology Grants

● = Primary Emphasis
◍ = Secondary Emphasis
○ = Little or None

To What Extent...	Data Sources						
	Self-Assessment Inventories	Project Staff Interview Protocol	Teacher Interviews	Student Interviews	Project Records/ Proposals/Plans	Project Evaluation Reports	Student Records and Test Scores
1. Were the program outcomes attained? *	●	●	◍	○	◍	●	●
2. Were major activities implemented as planned? *	●	○	○	○	◍	●	○
3. Were there changes in site-based planning for technology?	●	◍	○	○	○	●	○
4. Did the project support the state curriculum frameworks?	●	●	◍	○	◍	●	◍
5. Was staff development that supported implementation provided? *	●	●	●	○	○	●	○
6. Was project implementation coordinated with other programs? *	●	◍	○	○	●	◍	○
7. Did the project improve the management of learning resources?	●	◍	●	○	○	◍	○
8. Did student performance (academic and affective) improve?	●	◍	○	○	○	○	●
9. Were there desired changes in instructional practices (teacher perf.)?	●	◍	●	○	○	○	○
10. Was implementation restricted and why?	●	◍	○	○	●	●	○
11. Was implementation supported or facilitated and why? *	●	◍	○	○	●	●	○
12. Was there increased parent/home involvement?	●	◍	●	○	○	○	○
13. Was there dissemination of knowledge and/or products?	○	◍	○	○	○	○	○
14. Were unanticipated outcomes assessed? *	●	○	●	○	○	○	○
15. Was there equal access for students, teachers, and administrators?	●	●	●	●	○	●	○
16. Did the project assist other schools to implement technology? *	○	◍	○	○	○	○	○
17. Did new business and higher education partnerships result?	●	◍	○	○	○	●	○
18. Did the program implement the CDE goals and initiatives?	●	○	○	○	○	●	○
19. Did the program stimulate increased school planning/resource mgt.?	●	◍	○	○	○	○	○
20. Do teachers and administrators value the program(s)?	●	○	●	○	○	◍	○
21. Can the program be evaluated and show cost benefits?	●	●	○	○	○	●	○
22. Should the program be continued,discontinued, or expanded? *	●	◍	◍	○	○	◍	○
23. Should the program/practice be disseminated? *	◍	◍	○	○	○	●	○
24. Was assistance provided by the CTP? *	●	●	○	○	○	○	○
25. Was assistance provided by the CDE? *	●	●	○	○	○	○	○
26. Were technology applications continued after project funding ended? *	○	○	○	○	○	○	○
27. Was information on the availability of funding distributed equitably*	○	○	○	○	○	○	○
28. Is there a relationship between reviewer score and implementation?*	●	○	○	○	●	○	○
29. Does the adaptation of MTS Level II practices effect implementation? *	●	●	●	○	●	●	○

* Added to questions required by the RFP

The following pages describe the findings for the School-Based Educational Technology Projects obtained from the *Self-Assessment Inventory*, the telephone survey of 30 sites, the teacher and student surveys and the 11 site visits. Most of the projects had begun to implement their programs but had not started until January 1991. For this reason, some of the data collected was preliminary or incomplete. Given the short duration of implementation and the lack of availability of test scores, it was not possible to determine impact of the School-Based Educational Technology Grants Program on student academic achievement as measured by standardized achievement tests. However, a great deal of information

BEST COPY AVAILABLE

about student outcomes is reported from other sources such as teacher observations of student work and student self-reports on their own achievement.

The information from Tiers 1, 2, and 3 of the evaluation plan are reported in the following sections titled: 1) Findings from the *School-Based Educational Technology Grants Self-Assessment Inventory*, 2) Findings from the 30 Telephone Interviews, 3) Student Survey Findings, 4) Teacher Survey Findings, and Findings from Site Visits. The data sources are referenced each time they are used in the text.

Self-Assessment Inventory Results

The Self-Assessment Inventory was completed by staff from 78 percent of the School-Based Educational Technology Projects funded during the first AB 1470 funding cycle. The following categories are used to report the findings: 1) Background Information, 2) Planning, 3) Content, 4) Implementation, 5) Support Resources, 6) Funding Support, 7) Supporting and Impeding Factors, 8) Outcomes, 9) Self-Assessment Summary, and 10) Recommendations.

I. Background Information

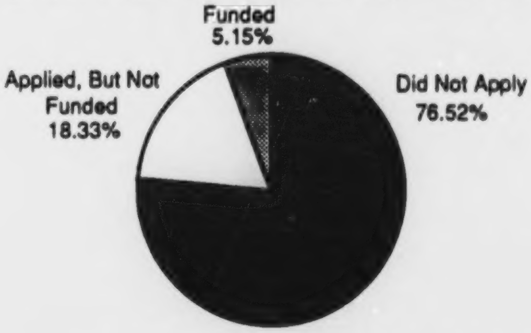
An overall understanding of the school and project demographics provides the context for interpreting the project findings and other information provided in this report. The following provides an overview description of the schools and project demographics that comprised the 275 projects studied.

A. School Demographics

Demographic information was obtained from both the grant applications and the *Self-Assessment Inventories*. Appendix B of this document provides additional demographic information derived from a prior study of the application forms of the School-Based Grants Program. The *Self Assessment Inventory* indicates the following profile for the schools receiving grants for the first cycle of funding during 1989:

The CDE received 1,670 grant applications. Of these, 321 were funded. Because there were 12 multi-school consortia grants, 379 schools actually received funding. These 379 schools make up 5.15 percent of the schools in the state (See Figure 2). The average grant size was $19,500 with a range of $2,750 to $89,850. Many of the funded multi-school grants were large consortia of small rural schools wherein individual schools did not have sufficient student population to warrant application for a grant.

Figure 2: Percentage of Schools Impacted Statewide



As shown on the following page in figures 3-5 about half of the schools funded during year one were suburban (47.9%) with the remaining two quarters being rural (25.5%) and urban (26.6%). The ethnic distribution shows about one half as Caucasian (45.9%), about a third (30.4%) Hispanic with the remainder as Asian (11.0%) Black (7.60%), Native American (1%) and other as (2.42%). Figure 5 shows that over half of the projects funded were elementary (58.7%) with the remainder divided by middle (22.8%) and high school (18.5%).

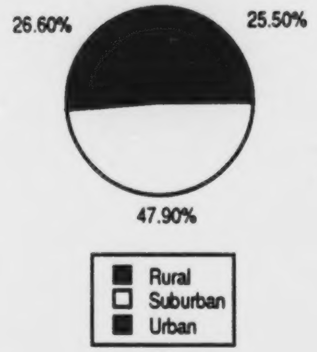


Figure 3: Distribution of projects by geographic factors

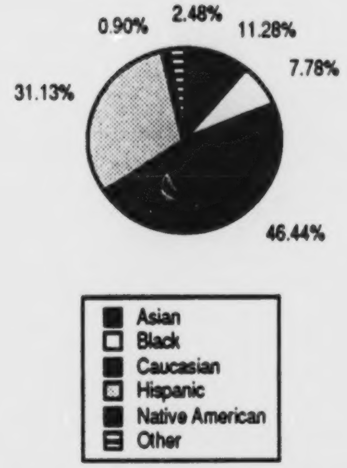


Figure 4: Distribution of Schools by ethnicity

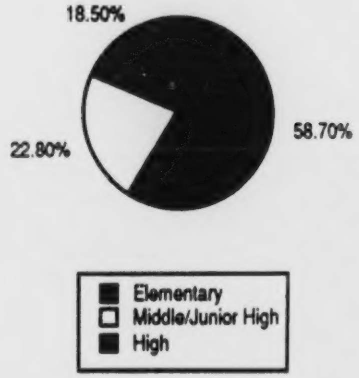


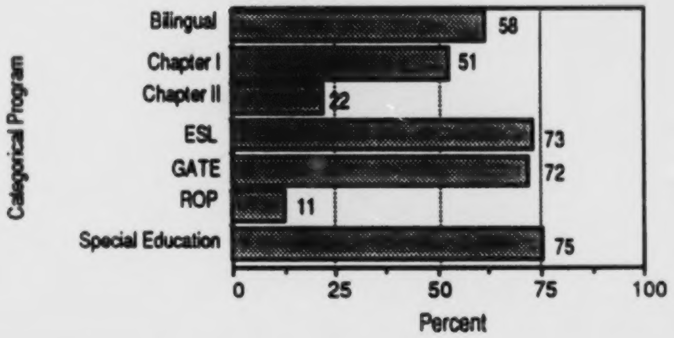
Figure 5: Distribution of projects by grade levels

These data show that the projects reflect the normal distribution of the population of schools in California. There were no major deviations from state-wide school demographics.

B. Project Demographics

There were 161,942 students served by the projects which returned surveys. The average project served 607 students with the smallest project serving four students and the largest serving 3,497 students. An additional 69,273 students indirectly benefited from the projects. The following chart shows the distribution of students directly served by projects that are already being served by existing categorically funded programs:

Figure 6. Percentage of projects that serve students enrolled in categorical programs.



The total number of teachers directly participating in the project was reported at 4,170 with an average of 16 and a range of one to 74 teachers. The number of teachers reported as indirectly participating and/or benefiting from the projects is 3,409. The average number of administrators involved in assisting projects was reported at two with a range of one to 14. Numbers of others, such as volunteers and parents, are reported to average at 11 per project.

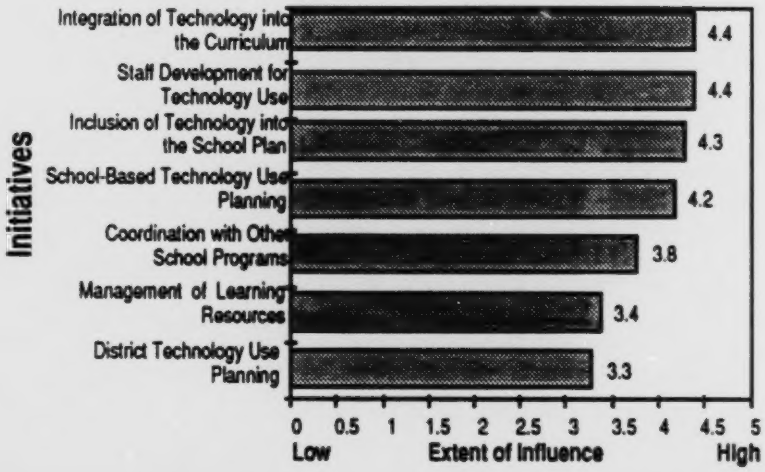
II. Planning

The successful implementation and maintenance of a project requires careful planning at the school site with the involvement of teachers and other staff members. This section describes the planning and development phase of the typical project, the role and extent of involvement of planning committees, and a brief summary of changes that projects underwent.

A. Planning for Project Development

Project staff were asked to report the extent to which the planning initiatives prompted by the application process influenced actual planning efforts. The data returned, as illustrated by the following bar chart, suggest that the initiative significantly increased school-based planning for technology use, integration of technology into the curriculum, staff development for technology use, and inclusion of technology into the school plan. Other areas such as district planning, management of learning resources and coordination with other programs were moderately affected by the initiative.

Figure 7: Project Staff Perceptions of Project Planning Activities Effect on the Implementation of State Initiatives



Influence of the AB 1470 Grant Application Process: Project staff were asked to rate the extent to which the application guidelines and forms assisted in conceptualizing their proposals. The average rating indicated that the guidelines and forms had a moderate to significant positive influence on development of the proposals. Most respondents also indicated that after the proposal was developed it served as an important "working document" to guide project implementation. Over a third of the project staffs indicated that the School-Based Grant Applications should not be changed. However, some indicated that the forms should include fewer items and more checklist or more open-ended items. Some of the suggested improvements for the application include:

- Frequently mentioned in the Self-Assessment Inventory was the suggestion of a two-year process:

> *"Research on change would demonstrate that it is almost impossible to see change and fully implement a project within one year. A two-year timeline would be more realistic."*

- Suggestions for tying additional funding to successful projects were made:

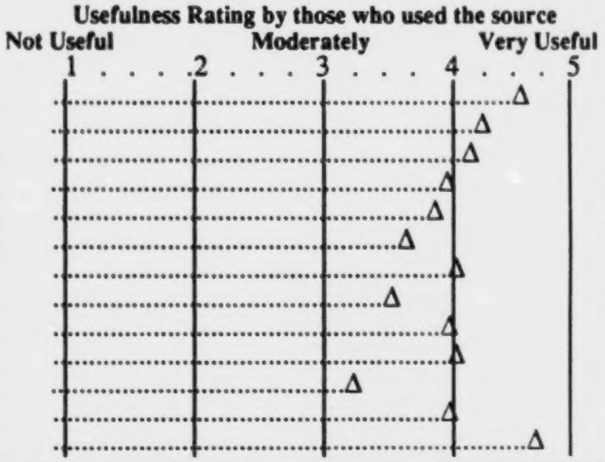
> *"...if the evaluation results are favorable, and if continued funding is needed, then refund the original proposal (with a simplified re-application)."*
>
> *"Require prospective applicants to obtain district commitment to project in planning, resource commitment, and continuance of project after state funding is terminated."*

- Many projects suggested that more resources be made available for proposal preparation:

> *"Help Hot Line numbers should have been provided in a pre-information packet and at the grant writing in-services given by the district. Knowledge of the Model Technology Schools assistance program should also have been included."*
>
> *"Establish a resource library of projects funded to assist grant planning and writing committees. Include a bibliography of State Frameworks, including cost, to aide comprehensive planning and alignment."*

Sources of assistance for planning and completing the proposal: Staff were asked to choose from a list the sources of assistance they used in the planning and development process and then to rate the usefulness of each. The most frequently chosen sources of help were resource teachers, mentors and other teachers available to assist. Second choice was the site administrator followed by the district office staff, the California Technology Project and county office of education staff. Items rating lower on the list were Model Technology Schools and TRIE. Some items, such as the AB 1470 telephone hotline were only available in certain areas of the state. The following chart shows the relative ratings of each of the sources of assistance and their "usefulness" ratings.

Source of Assistance	% who used the source
Teachers.	92.6%
Site Administrators	91.9%
District Office staff	85.7%
CTP Workshop	56.3%
CTP Staff.	53.0%
County Office of Education Staff	47.0%
Contract consultants	25.0%
Instructional Television Agency.	24.3%
Level II Model Technology Schools	21.3%
Level I Model Technology Schools	15.1%
CSUNet information.	19.5%
AB 1470 Telephone Hotline	14.0%
Other	13.2%



In general, all services available to schools were viewed as moderately to very useful. The data suggest that some valued services are not available to schools. For example, the Model Technology Schools are used by less than a quarter of the projects; yet, when used, they are rated as a valuable resource. The AB 1470 Telephone Hotline was available in only a few regions; hence, the low state-wide usage. It was highly rated by those who used it. Some examples of other sources of assistance were: technical assistance from technology vendors, institutions of higher education, previous AB 803 projects, and business and industry partners.

Why did school staffs decide to develop a project: All of the survey respondents answered this item which asked them to simply circle items from a 22-item list to indicate the primary reason(s) for developing the project. Following are the the selections' rank order.

1. Improve student learning
2. Increase technology use
3. Enhance the curriculum
4. Improve student attitude
5. Make teaching more exciting
6. Facilitate student-centered learning
7. Acquire equipment
8. Provide for staff development
9. Explore an interest in technology
10. Increase variety
11. Gain additional funding for the school
12. Try something new
13. Respond to a district priority
14. Respond to a community priority
15. Prepare students for employment
16. Prepare students for college
17. Stimulate restructuring
18. Respond to administrative priority
19. Increase school recognition
20. Enhance career advancement

B. Planning for Project Implementation

Technology Project use planning committee composition: Over one half of the project staffs reported that the School Site Council (SSC) was the primary group involved in the planning for the project. Others reported that the Chapter I Committee or a special project committee served as the planning committee for the project. Involvement of the SSC was recommended by the guidelines and by most who provided training and assistance for project planning and development.

Functions of the planning committee: Most said that the committee served to help develop the proposal (91.5%), to monitor and evaluate the project (86%) and to implement the project (87%). Respondents stated that the committees played a significant role in advising on project changes (78%), and advocating for the project (74%). Respondents rated the committee as playing a major part in designing, implementing, and monitoring the project plan. Over three quarters of the respondents reported that the committee met to plan and implement the project from a weekly (22%) to a bimonthly (18%) basis. The data are shown in the following table:

Table 2. Planning Committee Composition and Function

Groups Serving on Planning Committees	Percent
Committee established for the project	83.8
School Site Council	59.6
Other	33.5
Chapter I Committee	10.3
Functions of the Planning Committees in Project Activities	**Percent**
Proposal Development	91.5
Monitoring and evaluating the project	85.7
Implementing the project	81.6
Advising on project changes	77.9
Advocating for the project	73.5
Other	9.2

The Technology Use Plan: Two-thirds (67%) of the respondents indicated that technology use was written into the existing School Improvement Plan. The remainder reported that a separate TUP was developed (16%) or that technology use was written into some other type of plan. Only two percent indicated that technology use was incorporated into the Chapter I Plan. Seventy percent of the projects reported that the school TUP closely supports a district plan, and only seven percent indicated that a district TUP does not exist. Several indicated that the school TUP incorporates some district planning elements. No projects indicated that the school plan did not support a district plan, and less than one percent indicated that a school TUP was not developed. Respondents were asked to provide open-ended responses to questions about the most and least helpful aspects of the technology use planning process. Samples of some of the responses to these questions are as follows:

1. The most beneficial aspect of the technology use planning process reported were. . . .

- The committee or team approach to planning gave a higher level of "buy-in" to implementation:

> *"Because the teachers planned the project, we felt direct responsibility for implementation."*

- The integration of the project into existing school goals and the existing school plan also was frequently mentioned:

> *"...we used the needs assessment from our School Improvement Plan and we integrated technology into our curriculum."*

> *"...tying the project to our needs assessment was the most beneficial. It was hard to plan activities but the (planning) process made it easy to implement the project."*

- The availability of support services during the implementation was frequently mentioned.

> *"..for questions we had along the way we called the CTP and county office and received very helpful information."*

The least helpful aspects of the technology use planning process reported were. . . .

- Over-planning was a problem for some:

> *"Our timeline for our step-by-step process was overly ambitious. We did not allow for unforeseen obstacles."*

- Lack of knowledge of resources was an obstacle for many:

> *"...we had difficulty locating appropriate materials for the special needs of our students."*

- Lack of time was another constraining factor:

> *"The short time provided by the state made it difficult to meet the due date with a quality proposal. It also was difficult to get released time for the authors to write the grant."*

C. Modifications to the Original Proposed Plan

Another aspect of planning is the degree to which the project actually implemented and followed the proposed plan. It has been shown that projects which follow and implement their plans are more successful than those which either do now not follow a plan or radically change plans midstream. To assess the continuity of the School-Based Educational Technology Plan implementation, respondents were asked to indicate major changes and the reasons for such changes. Ninety percent (245) of the respondents indicated that they had made major changes in one or more areas since the beginning of the project. The areas of major changes from the original plan were adjustments to the following: 1) student and staff objectives, 2) staff development activities and the implementation schedule, 3) additions and deletions of student and staff participants, 4) major changes in decisions about hardware and software purchases, and 5) in the distribution of funding to certain budget items.

III. Project Content

This section describes the curriculum and content areas targeted by the projects in the study, the adoption of existing exemplary programs and practices, as well as the specific applications of technology to enhance the emphasized content areas.

A. Areas of Project Focus

Areas of Curriculum and Instructional Emphasis: The areas emphasized by projects were determined by responses of the project staff to a rating scale whereby respondents indicated which curriculum, process skill , and technology areas were emphasized. The extent of emphasis was rated as major, secondary, or no emphasis for each of the items on the checklist. The data indicate that most projects placed major emphasis on English-language arts and secondary emphasis on history-social science and science.

Over half indicated no emphasis on all other subject areas. This seems to follow the *California Curriculum Framework* implementation cycle. Additionally, most projects utilize computers for writing and tend to fall into the English-language arts category. All process skills were indicated to be a major emphasis for over half of the projects, especially critical thinking, study skills, interest/attitude, and cooperative learning. This finding is close to what projects planned to emphasize as discussed earlier in the section on implementation. School-wide areas emphasized most for the projects tended to be technology in the curriculum (92%), general technology applications, and staff development. Projects tended to place less emphasis on technology use for school restructuring and school climate improvement. The following charts illustrate the results of this survey item.

Figure 8: Subject Areas of Major and Secondary Emphasis

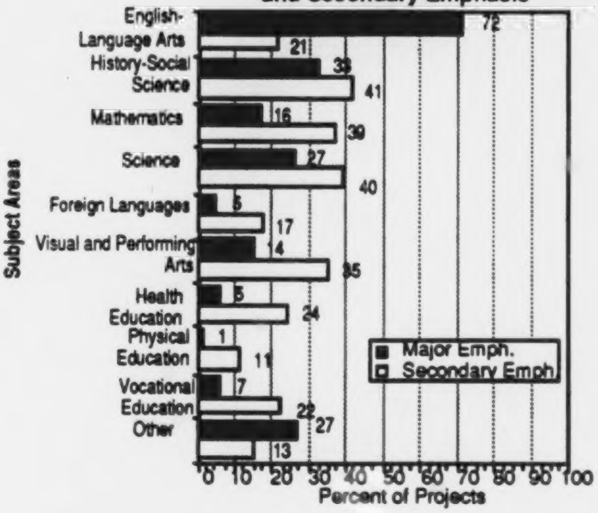


Figure 9: Process Areas of Major and Secondary Emphasis

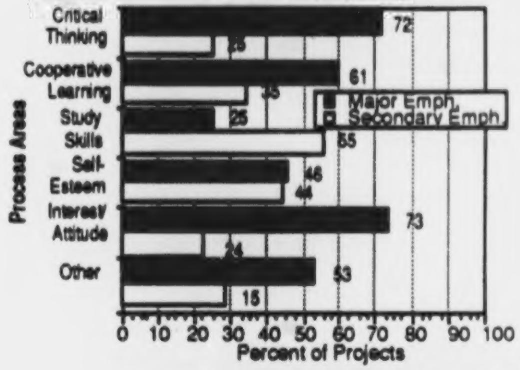
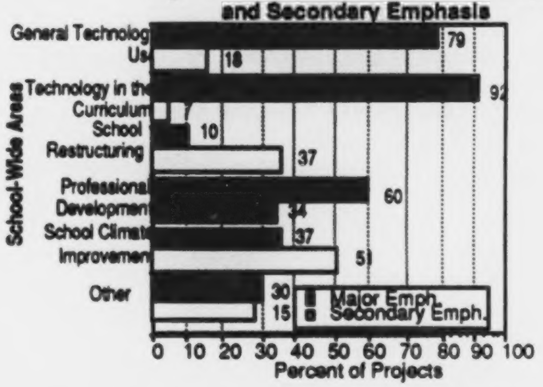


Figure 10: School-Wide Areas of Major and Secondary Emphasis

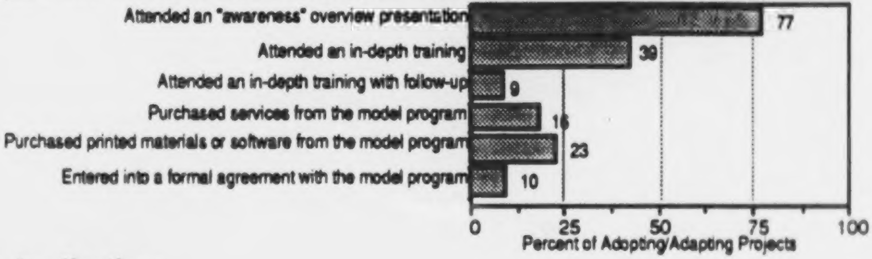


Adoption/adaptation of model technology schools: Projects indicated whether or not they had adopted or adapted practices and used services of one of the six Model Technology Schools (Level I) or Model Technology Schools (Level II). About 30 percent reported that they had adopted practices from the model programs. These 30 percent (84 School-Based projects) then answered questions about the specific programs adopted and the types of involvement with the programs.

Project LINKS and FUTURE were the most often adopted or adapted. In general, the Level II MTS projects were more often adopted than the Level I projects were. This is due largely to the fact the Level II MTS projects were disseminating their products and practices during 1989 while Level I MTS projects were still largely involved in development and getting ready for dissemination during year five (1991-1992) of their five-year funding cycle.

Types of involvement: Almost all of the adopting projects attended some type of "awareness" overview presentation on the project. However, about half of these projects participated in in-depth training, purchased services from the model program, or purchased printed materials or software from the model programs. Volume IV of this report addresses the issue of level of adoption or adaptation and suggests that much needs to be done to increase the breadth and depth to which schools actually and faithfully adopt or adapt models. The following chart indicates the level of use of services offered by models projects:

Figure 10: Level of Use of Services Offered by Model Technology Schools



B. Technology Applications

Technology: The types of technology applications used by the projects were indicated by a checklist item whereby respondents indicated "major", "secondary," or "no emphasis" for a list of types of hardware and software. The data show that computer applications far outdistance all other technologies in terms of inclusion in the projects. However, computers are often combined with other technologies such as laserdisc and CD-ROM. Interactive laserdisc ranked second in terms of inclusion in projects. Instructional Television showed moderate use (21.5%) as a secondary technology but ranked low as a primary technology (11%). Some technologies, such as interactive laserdiscs and CD-ROM, seem to be emerging.

Table 2: Levels of Emphasis by Type of Technology Used

Type of Technology	Major Emphasis	Secondary Emphasis	No Emphasis
Computers	**91%***	6%	2%
Laserdisc/Interactive Video	34%	18%	47%
Instructional Television (ITV)	11%	24%	**64%**
Cable Television	6%	17%	**76%**
Audio/Video Production	31%	23%	45%
Satellite Downlink-ITV/Dist. Learn.	2%	5%	**92%**
LCD Panels, Video Projectors	21%	24%	**54%**
CD-ROM	21%	9%	**70%**
Technology for the Handicapped	4%	17%	**78%**
Science Lab Equipment	8%	7%	**84%**
Calculators	5%	10%	**85%**
Telecommunications	15%	22%	**61%**
Electronic Music Equipment	3%	7%	**90%**
Networking of Computers	17%	8%	**74%**
Other	42%	4%	**51%**

***Bold above 50%**

The software data suggest that word processing is the primary type of software used and this could be related to the curricular emphasis on English-language arts for most projects. The data also suggest an emphasis on individual stand-alone technology rather than networked integrated learning systems. This could be because the small grants cannot afford the more costly ILS systems, and/or that teachers feel that ILS systems are too constraining and do not meet the needs of students. Selection of technology hardware and software was a function of several variables including access to the technology, awareness of its use, and the availability of software and staff development needed to support use of the technology.

In general, the data seem to confirm commonly discussed trends which suggest the increased use of multiple technologies with the computer as an integral component combined with interactive laserdisc systems. Distance teaching technologies such as satellite and telecommunications are very seldom mentioned as included in school-based projects.

Table 3: Levels of Emphasis of Type of Software Used

Type of Technology	Major Emphasis	Secondary Emphasis	No Emphasis
Word Processing/Desktop Publishing	**72%***	13%	14%
Integrated Learning Systems	10%	11%	**76%**
Computer Assisted Instruction	25%	20%	**54%**
Hypermedia/Multimedia	31%	23%	45%
Graphics Programs	32%	31%	35%
Electronic Encyclopedia, Reference	20%	15%	**63%**
Data, Spreadsheet, other business	16%	30%	**53%**
Music, voice, speech recognition	4%	12%	**82%**
Programming Languages	4%	13%	**81%**
School Management	6%	26%	**67%**
Other Instructional Software	22%	22%	**55%**
Telecommunications Software	14%	23%	**62%**
Other	35%	2%	**60%**

***Bold above 50%**

Top five technology-based programs used: In the self-assessment survey, one of the questions asked was: "List the five most widely used software/video/laserdisc/CD-ROM titles for this project and rate the effectiveness of each title in supporting the project's effectiveness." Almost 400 different titles were listed by the projects. The 20 most widely used titles are listed below.

Title	Publisher	Type of Media*	Number of Surveys	% of Surveys
1. Children's Writing and Pub. Workshop	Learning Co.	s	56	21.7
2. Apple Works	Claris	s	43	16.7
3. GTV	Natl. Geographic	l	36	14.0
4. Magic Slate	Sunburst	s	34	13.2
5. Microsoft Works	Microsoft	s	29	11.2
6. HyperCard	Apple	s	22	8.5
7. Print Shop	Brøderbund	s	21	8.1
8. Windows on Science	Optical Data	l	19	7.4
9. Muppet Slate	Sunburst	s	16	6.2
10. Grollier's Electronic Encyclopedia	Grollier's	c	16	6.2
11. Page Maker	Aldus	s	16	6.2
12. Microsoft Word	Microsoft	s	16	6.2
13. Compton's Multimedia Encyclopedia	Compton's	c	15	5.8
14. VCR Companion	Brøderbund	s	14	5.4
15. National Gallery of Art	Laser Learning	l	13	5.0
16. FredWriter	Public Domain	s	10	3.9
17. Oregon Trail	MECC	s	10	3.9
18. Timeliner	Tom Snyder	s	10	3.9
19. Visual Almanac	Apple	l	10	3.9
20. Hyperstudio	Roger Wagner	s	10	3.9

* s = computer software, l = laserdisc, c = CD-ROM

In general, application- and reference-oriented programs were chosen over curriculum-based instructional programs.

IV. Project Implementation

A knowledge of the degree of completion of project activities is essential to understanding the final outcomes of the project. This section describes the three major project components (learning resources management, staff development, and evaluation) in terms of project implementation emphasis. Projects rated the level of implementation at the time of this study. Many (61%) reported that the projects were behind schedule while 36 percent reported that the projects were on schedule. Only two percent reported that their projects were ahead of schedule. Less than one percent indicated that the projects were not implemented at the time of this study. Following are the results of the self-assessments and interviews in relation to specific aspects of project implementation.

A. Resource Support and Coordination

Learning resources management was an area of emphasis established by the CDE in an attempt to ensure that projects plan for and include staff to support the efficient and optimal use of resources at the project site. Several questions were asked of project staff to identify areas of need in learning resource management.

Support resources: Respondents were asked to indicate the category of staff person (if any) that was assigned to manage the project at the school site. Almost half of the respondents indicated that classroom teachers were usually appointed to assist the project. Several others mentioned were the principal (16%), the resource teacher (13%), a district office person (2%), and a contracted consultant (1%).

Respondents were asked to identify the resources used in the preparation of their proposals. Consistently, it was reported that the major source of individual assistance for project implementation was a peer or fellow staff person (69%), followed by district resource persons (49%), school resource persons (40%), library/media resource staff (33%), outside consultants (29%), county office of education (19%), CTP staff (15%), and ITV Agency staff (7%). In general, project staff report that some type of assistance was almost always (57%) or usually (38%) available.

When asked to rate availability of various resources, teachers report that time for planning and implementation are less available than the resources to provide the assistance. Respondents indicated that administrative support, staff development, and access to technology were readily available.

Coordination with other programs: Respondents generally report that their projects are coordinated with other programs such as SIP, Chapter I, and others. Furthermore, they report that the projects significantly improved the management of instructional and learning resources.

Access of students and teachers to project resources: When asked to indicate the extent to which there was equitable access to project resources among participating students and teachers, over 80% of the respondents indicated that students and teachers had equitable access to resources.

B. Staff Development and Technical Assistance

Project staff were asked to list and rate all staff development activities implemented as part of their School-Based grant. Sufficient staff development information was collected by CETAP to develop a database describing the type of activity, rating, level of use, presenter, topic, and cost of each staff development session conducted for each of the 275 projects assessed.

Workshops were approximately divided into thirds between awareness level, in-depth training, and in-depth training with follow-up assistance to the site. Most workshops were for teachers (88%) with a smaller number including administrators (33%), classified staff (24%) and others (12%).

The respondents rated about one-half of the workshops (48%) as excellent, a third as good (32%), and less than 10% as average, fair, or poor. The level of classroom use of the information acquired in the staff development was rated with over a third (36%) as frequently used, followed by continuous use (28%), occasional (19%) and little and none being less than 5% of the cases. Most (81%) of the staff development activities would be recommended to other educators. These data are illustrated in the following table:

Table 4: Staff Development Activities

Item	% Responding
Type of Staff Development	
Awareness	30.6
In-Depth	36.6
In-Depth with Follow-up	34.3
Participants	
Teachers	87.5
Classified Staff	24.3
Administrators	32.5
Others	12.9
Overall Rating of Staff Development	
Poor	0.2
Fair	0.8
Average	7.3
Good	32.3
Excellent	48.4
Observed Level of Classroom Use of Information Presented	
None	1.9
Little	4.7
Occasional	19.1
Frequent	36.3
Continuous	28.1
Would you recommend this staff development presenter to others?	
Yes	81.5
No	3.3

Formalized Staff Development: Most (over 80%) of the respondents indicated that the staff development activities chosen for their projects matched the needs of the project from a moderate to a significant extent. The major sources of formalized staff development tended to be the school district (58%), followed by contracted consultants (44%), the county office of education (22%), the California Technology Project (15%), ITV Agencies (8%), and miscellaneous other sources (46%) (Respondents could check more than one item).

Individualized technical assistance: The major sources of technical assistance tended to be the school district (67%), followed by contract consultants (43%), the county office of education (26%), California Technology Project (19%), and ITV Agencies (6%) (Respondents could check more than one item). Less than one percent reported that no assistance was available. The types of technical assistance received tended to be installation and operation of equipment (81%) and problem solving/trouble shooting (71%). About half received technical assistance for software selection and technology integration. Thirty-eight percent received services for evaluation and 27 percent received assistance in finding resources (27%).

C. Evaluation Procedures used by Projects

All projects were required to develop and implement a comprehensive assessment of the project implementation as well as the impact of the intervention on students, staff, and the school program. Most of the project staff (90%) indicated that the project plan included on-going assessment activities. A lesser, but still significant percentage (74%) of respondents indicated that the evaluation plan was implemented as stated in the project proposal.

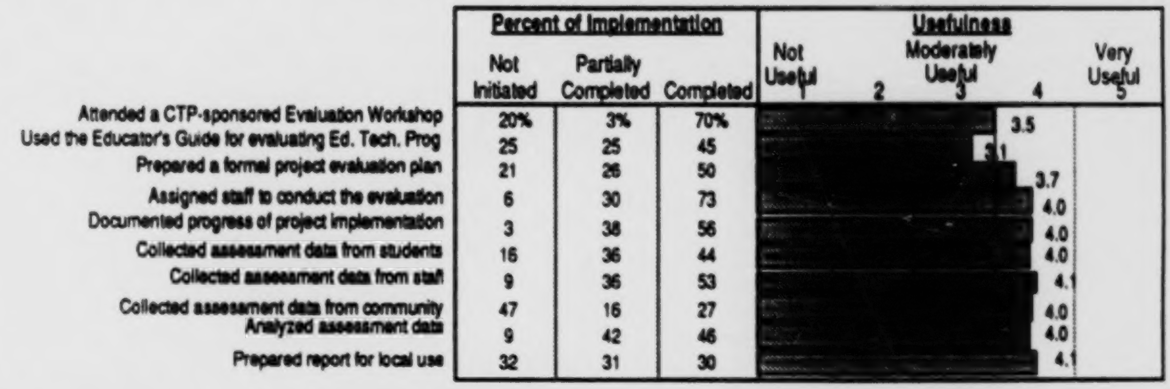
Respondents were asked to rate the level of implementation of a set of evaluation activities and then to rate the usefulness of each activity for completion of an evaluation of their project. The extent to which such activities are implemented determines the "evaluability" of the projects. The activity engaged in by most (70%) of the respondents was participation in CTP-sponsored evaluation workshops. Seventy-three percent said that a staff person was actually assigned to conduct the evaluation.

About half of the respondents reported that they had used the CTP-sponsored *Educator's Guide for Evaluating Educational Technology Programs,* prepared a formal written plan, documented progress of project implementation, collected assessment data from students and staff and analyzed the data. About a third actually prepared a report on the evaluation activities.

Respondents rated all evaluation activities as moderately useful to very useful. The most useful assistance for evaluation was having someone assigned the responsibility of facilitating the implementation of the evaluation. Most indicated that school staff (90%) and district staff (41%) assisted in the evaluation. It should be noted that some evaluation activities may not have been completed because many projects were only partially implemented at the time of this study. About half of the projects reported that the planning committee was involved in reviewing formative evaluation findings.

The following chart lists the major evaluation activities, the level of implementation of each activity and the rating of usefulness of the activity if implemented.

Figure 11: Evaluation Implementation



	Percent of Implementation			Usefulness
	Not Initiated	Partially Completed	Completed	Not Useful 1 / 2 / Moderately Useful 3 / 4 / Very Useful 5
Attended a CTP-sponsored Evaluation Workshop	20%	3%	70%	3.5
Used the Educator's Guide for evaluating Ed. Tech. Prog	25	25	45	3.1
Prepared a formal project evaluation plan	21	26	50	3.7
Assigned staff to conduct the evaluation	6	30	73	4.0
Documented progress of project implementation	3	38	56	4.0
Collected assessment data from students	16	36	44	4.0
Collected assessment data from staff	9	36	53	4.1
Collected assessment data from community	47	16	27	4.0
Analyzed assessment data	9	42	46	4.0
Prepared report for local use	32	31	30	4.1

Assessment data sources typically used by School-Based Grant Recipients: The Self-Assessment Inventory results showed that the data sources most often used were teacher surveys (87%), teacher assessments of student work (87%), classroom observations (84%), and incidental comments by students and staff (84%). Other assessment sources often used by the projects were portfolio assessments of student work (51%), student interviews (59%), records of computer use (67%), student surveys (66%), teacher interviews (79%), and noting changes in school plans. Several projects utilized standardized achievement tests (20%), proficiency tests (22%), CAP Writing (13%), and other CAP tests (9%).

As suggested by the provisions of AB 1470, several projects utilized the self-study (37%), Program Quality Review (PQR) (24%), and WASC reviews (4%). These percentages would probably be higher if the site reviews had been conducted during the funding cycle of the project. For example, PQR is only conducted every third year for most schools. Forty-three percent of the projects reported that site review assessments were not conducted during the project.

The data collected suggest that it would be feasible to conduct in-depth evaluations of individual school-based projects. Most projects reported that at the time of this study, they had not yet collected post-assessment data and that on-going data collection was in progress. Four projects stated in interviews that they had not implemented evaluation procedures because their projects were just getting underway. A follow-up study should review and analyze the data being collected by these projects during spring of 1992.

- For Schools whose PQR or WASC review coincided with their AB 1470 implementation years, there was a consistent pattern of recognition:

> *"Our project received a commendation by the WASC visiting committee as a strong reinforcement to the math project...involving our LEP students was specifically applauded. . . . .Our project was included in our PQR as technology integrated into the curriculum ... we received a commendation."*

- Other schools found the AB 1470 project a vehicle to fully implement their school improvement plan:

> *"... our self-study included technology as a major emphasis ... we have been trying for three years. . . . and now we have two fully operational computer labs."*

- Many schools noted the benefits of the staff development requirement:

> *" ... and now our teachers want more training in the use of computer programs.. . . . .the staff development was the most beneficial and productive component (of the project)."*

D. Evaluation Reporting by Projects

Over half of the projects (56%) indicated that an optional end-of-year narrative report would not be prepared, and forty-three percent indicated that they would prepare such a report. Respondents preparing reports indicated that the school committee (67%), school staff (66%), and the district administrators (47%) would be the major recipients of the reports. Other recipients would be the school board (34%), community (27%), and other schools and/or districts (22%).

E. Extent of Implementation

Several self-assessment questions were designed to determine the extent to which the projects implemented the planned activities. Seventy-two percent of the respondents indicated that the original project activities were implemented as planned. Respondents were asked to list the major activities for their project and then to rate each activity as to whether it was *planned* or *added* and then rate the level of implementation of each activity. The results of this survey item show that most projects (90%) stayed with the activities originally planned and that only 6% added new activities.

The project staff report that about half (46%) of the activities were completed, and half will be continued or repeated in 1991-92. Twenty-two percent of the activities were reported by projects to be partially completed, and only 6% of the project activities had not been initiated. These findings suggest that most projects were able to complete about half of what was expected by the end of the first year and that most activities were, at least, initiated and likely to continue.

V. Support Resources

Encouragement and support resources provided by the school, district, and regional agencies are critical factors that influence the success or failure of any project. Without support, projects cannot be fully implemented and be expected to produce the desired outcomes. This section describes services used while planning and implementing projects, including regional California Technology Project services, and the extent to which evaluation resources were utilized.

A. Services

Support Service Agencies: Support services are made available to school-based projects from a variety of sources including the Model Technology Schools (MTS), the CTP, ITV, school district offices and contract consultants. Respondents were asked to rate services by type, level of use, and value. The findings show that the school district office provides the service most used (77%) with the highest number of "very useful" ratings (57%), and the greatest amount of individualized assistance to project staff. The CTP regional consortia and the ITV agencies provide a service that is indicated to be useful to very useful but is less often used due to lack of access and information about the service. These agencies are most often selected for providing information, printed materials and workshops and are used on an intermittent basis or two or three times a year.

Model Technology Schools: The Level II Model Technology Schools are subject and grade-level specific dissemination projects which were used most often for their printed instructional materials, information distribution, individual assistance and workshops. The Level I Model Technology Schools are used less than other resources. However, this is because these projects were only beginning to enter the dissemination cycle of their implementation. Both Level I and Level II MTS projects are infrequently used but seen as useful or very useful by those who use the services and resources offered by these projects.

District support resources: About one half of the projects indicated that the district appointed a part-time staff person to assist the project with only 7% assigning a full-time person to assist. Slightly less than half of the projects did not assign anyone to the project or found some outside source of support. Over half of the projects stated that the extent of help given by the district-assigned person was moderately to significantly useful.

B. California Technology Project (CTP) Services

Special attention is given to the CTP because one of its major functions is to serve the School-Based Grants Program. The CTP provides services ranging from grant development to evaluation training. Most of the respondents (87%) indicated that they are aware of the CTP and the services it provides. These respondents answered a set of questions about their participation and perception of the usefulness of the CTP. The CTP resources most often used were the AB 1470 Grant Preparation Workshops (68%), the *Educator's Guide for Evaluating Educational Technology Projects* (60%), and individualized assistance, in person or by phone (44%). Moderate use was indicated for regional meetings and TRIE with participation in Technology Leadership Academies and video teleconferences also reported.

All resources were rated as being moderately to very useful. The resources rated as most useful were the Grant Preparation Workshops, the Technology Leadership Academies, and individual technical assistance. For additional details on the CTP, see Volume VI of this report.

C. Evaluation Assistance Resources

The procedures and forms used to collect the data for this study are being developed for ongoing use by projects to facilitate the gathering of information needed to complete their evaluation. For this reason, respondents were asked to evaluate the form. Project staff were asked to rate the extent to which the Self-Assessment Inventory served as a "working document" to guide project evaluation. Responses varied widely, ranging from "not at all" (13%) to "moderately" (27%) to "significantly" (22%). It should be noted that projects did not receive the self-assessment inventories until after implementation had begun. When asked about desired changes for the *Self-Assessment Inventory* guidelines and forms respondents generally desired fewer items (61%), with 25% suggesting the Inventory not be changed. A few wanted more open-ended items (12%) while others suggested more multiple choice items (11%). Following are some of the comments from respondents:

- The most frequent comments related to timeliness of receipt of evaluation forms:

> *"... it would have been a more useful tool for both implementation and evaluation if we had had it at the beginning of the year ... we could have used the formative evaluation for mid-course corrections."*

- Some of the smaller schools suggested a modified form:

> *"... we are a very small school/district with only 30 students. We received $2,700. Could there be a 'short form' for small schools. . . . It is difficult to implement a project and at the same time gather and analyze the data and finalize the report all in one year."*

Project staff were asked to indicate evaluation resources used and rate the usefulness of each. The most often used of ten available sources of evaluation assistance was teachers (95%), followed by the school principal (82%), the district office staff (60%), the CTP evaluation workshop (50%), and the CTP staff (34%). Respondents indicated that teachers, principals, and consultants provided the most useful evaluation assistance for their projects with all other sources of assistance rated as slightly better than moderately useful.

- Teachers commented specifically on the value of the CTP regional consortia resources. Two examples are:

> *"Really helpful, we would have missed deadlines, etc. , without their help." (San Diego). . . .They helped with our proposal and provided us with information; it's nice knowing they are there and available." (Central Valley)*

VI. Funding Support

The availability of sufficient funding is critical to most projects. Much of the funding may come from the local school or district as it is leveraged by the funding provided by the state. This section describes the sources of funding obtained for projects, how the funding was used, and future sources of funding identified to continue the projects after termination of state funding.

A. Funding Sources

Funding sources for technology before AB 1470 were identified by project staff. The most common alternate funding source identified was followed by AB 803 grants (60%), Lottery (47%), Chapter I (36%), Chapter II (33%), Business partnerships (18%), and others including district funding. (respondents could choose more than one source)

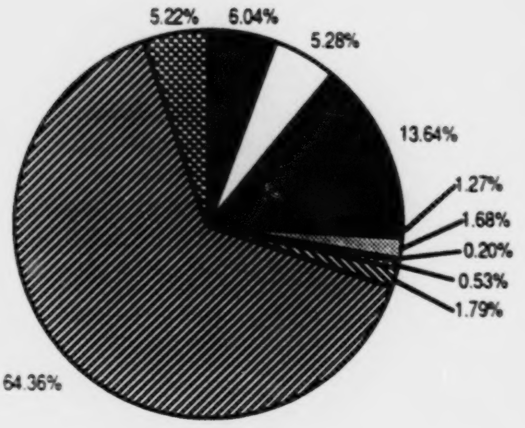
The average AB 1470 grant was calculated to be $21,211 with a minimum grant size of $2,700 and a maximum of $89,850. The few projects with high funding levels over $50,000 were multi-school projects. The "in-kind" and direct cash support (other than state AB 1470) received from the projects was reported. The average direct matching amount was $6,809 with a range of $170.00 to $99,292 and the average in-kind matching amount was $7920 with a range of $65.00 to $247,000. Most projects indicated an actual increase in the amount of matching over what was planned in the original proposal. The rank order of outside funding support sources is shown below along with the average amount received.

Rank	Source of Support	Average Amount
1.	School district general funding	$ 5,003
2.	School site	$ 2,763
3.	School Improvement Funding	$ 2,113
4.	Business and industry	$ 1,225
5.	Lottery	$ 1,098
6.	Chapter I	$ 1,038
7.	Mentor Teacher Programs	$ 496
8.	Private Foundation	$ 429
9.	Community donations	$ 276
10.	Chapter II	$ 207
11.	Proposition 98 Supplemental Grants	$ 80
12.	Federal grants	$ 60
13.	State fundings other than AB 1470	$ 45
14.	Colleges and Universities	$ 25

B. Project Expenditures

The largest expenditure for projects from state AB 1470 funding was for technology hardware (64%), followed by software (14%), staff time, teacher release time and substitutes, and other expenditures. The following chart illustrates the distribution of expenditures across all projects surveyed by CETAP.

Figure 12: Distribution of Actual Expenditures

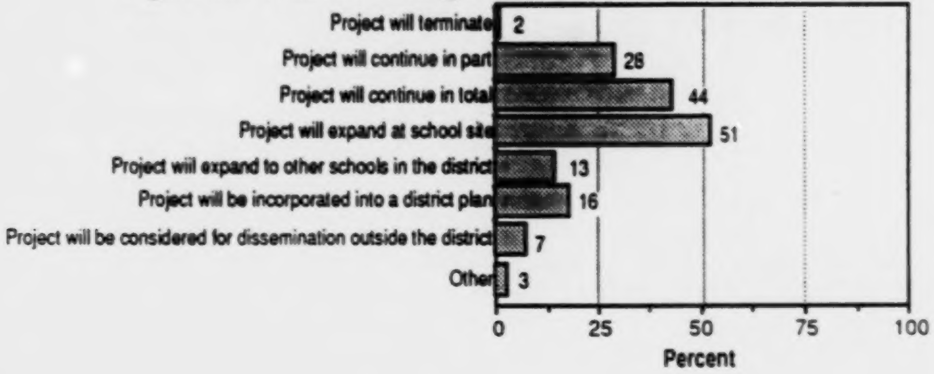


Expenditure	Amount	%
■ Project Staff Time	$411,083	6.04
□ Teacher Release Time and Substitute Salary	$359,468	5.28
■ Software, Videotapes, etc.	$928,180	13.64
■ Printed Materials	$86,384	1.27
▒ Staff Development Consultants	$114,225	1.68
☰ Evaluation Consultants	$13,678	0.20
▥ Other Consultants	$36,095	0.53
▧ Conference Expenses	$122,046	1.79
▨ Hardware	$4,380,986	64.36
▩ Other	$355,172	5.22
Total	$6,807,317	100%

C. Anticipated Future Funding

Projects were surveyed to indicate probability of continuation for the next school year. About one half of the projects (51%), reported that they would expand the project at the school site, and an average of 44 percent said that they would continue the project in total at the site. About a third (30%) said that they would continue in part next year. Sixteen percent said that the project would be incorporated into the district plan while 13 percent reported that the project would be expanded to other schools in the district. A few stated that they would consider seeking other ways to fund dissemination of project practices and products outside of the district. In most cases, the year of AB 1470 funding served as a "seed" to get on-going projects started. The following bar graph illustrates these data:

Figure 13: Future Funding Plans for AB 1470 Projects



Following are examples of aspects of the projects that will continue:

- Self-evaluations indicated that the AB 1470 School-Based grants were not "one-shot deals." In most instances, the funds were seen as "seed money":

> *"...we plan to expand the laserdisc library as funds are available. . . . we will purchase additional hardware and software . . . we hope to buy additional software for Spanish and ESL language arts."*

- Staff development seemed to become an on-going component of the school plan and will be expanded in many cases:

> *"Follow-up staff development activities will continue, focusing less on hardware proficiency and more on incorporating new technology into curricular and instructional changes. . . . .We will in-service our new teachers in the use of computers and software."*

- The projects seemed to be an impetus for change in the curricular and instructional aspects of the school:

> *"There will be continued classroom emphasis on integration of computers and language arts.. . . . . student work with technology, including independent and cooperative learning will continue and expand.. . . . .our English and social studies teachers will be doing more team teaching."*

D. Adequacy of Funding

Project staff were asked to indicate the adequacy of AB 1470 funding for the project. Slightly more than half (52%) indicated that funding levels were adequate for project implementation. About 40 percent indicated that funding was insufficient but that the project could still be implemented. Only eight percent indicated that it was not possible to implement the project with the funding provided.

Concern has often been raised about the duration of funding for these projects. Most project staff (90%) reported that that the projects should be funded for two or more years. Only four percent stated that one year was adequate for funding of their projects.

Over half reported that the project would not have been implemented without the existence of the AB 1470 funding combined with the accompanying planning process. Forty percent reported that the project would have been partially implemented without the funding and less than one percent reported that the project could have been implemented without the AB 1470 support.

VII. Supporting and Impeding Factors

There are factors that support, and impede, the successful implementation of project goals and objectives. As a result, outcomes of the project may exceed, meet, or fall short of expectations. This section shows the relationship between the supporting/impeding factors and the attainment of the final outcomes.

A. School Factors

Project staff were asked to indicate the extent to which school and environmental factors related to students, staff, administration, and general factors that influenced the implementation and outcomes of the project. The positive student factors were motivation and interest, while the major impediment was student attrition. Staff attrition was a major impediment to project success and staff morale, interest and availability of support staff were major support factors. Staff reported that school administrative leadership and interest followed by district support were the most important environmental factors influencing project success.

Other more general factors influencing project success were prior technology use in the school, community interest in technology use in schools, and coordination with other programs. Large class size was reported to be a major impediment to project success. Following are some examples of school factors that were reported to have supported or impeded the project:

- Consistently, the "people factors" provided the greatest support to the projects:

> *"... our teachers and administrators were enthusiastic. . . . district personnel provided guidance and direction. . . .willingness ... enthusiasm ... commitment of our staff.. . . . .. teachers and administrators were totally supportive and provided tremendous time and energy ...."*

- Having an administrator who could "work the system" was seen as a tremendous asset:

> *"Our site administrator was able to find funds to purchase additional equipment and materials ... which gave us the rich and varied resources needed to fully implement our fine arts program."*

- The most frequently mentioned impeding factors were those that generally were beyond the control of the site staff:

> *"... the long delay in receiving our equipment.. . . . .The limited classroom space made it difficult to set up centers.. . . . .our electrical outlets and wiring are antiquated.. . . .our lack of substitutes for released time.. . . .problems with vendors and faulty software... . . .district purchasing procedures are slow."*

B. Project Factors

Project staff were asked to indicate the extent to which specific project related factors related to planning, staff support, funding, evaluation, and learning resources management influenced the implementation and outcomes of the project. The *planning* factors rated as most positive were the proposal preparation process and technology use planning. Staff factors which significantly supported implementation were site administrative support, involvement of the school committee, and technical support. Funding factors of greatest importance were overall funding from AB 1470, district financial support, and district in-kind support. Evaluation was considered to be important to keep projects on target. Learning resource factors considered important were computer hardware and software availability, access to equipment and additional resources, and the availability of video equipment and

ITV resources. The project factors that supported implementation, again, fell into consistent patterns. The funding through AB 1470 was clearly the impetus for the implementation of an idea:

> *"AB 1470 funding was an indispensable supportive factor to the project. Without it, the project could not have been implemented.. . . . .This project led to district support in the form of additional funding for equipment and resources."*

- The planning requirement was found to be a strong factor in implementation:

> *"The TUP was an opportunity for our school since we had no technology before we wrote this grant.. . . . .The planning time forced us to get the 'big picture' of what we wanted to do."*

- Staff development was a strong supporting factor:

> *"... we had nine hours of in-service ... then went back to our classrooms and set about doing what we had learned to do."*

- Formative evaluation was used by many:

> *"... the on-going evaluation fine-tuned our program."*

Project factors that impeded project implementation again followed a consistent pattern across projects.

- Most often cited was equipment procurement:

> *"... we had problems with vendors and our district warehouse. . . Delivery of hardware was delayed. . . .Most of our hardware still has not been delivered."*

- Another frequently mentioned problem was lack of time.

> *"... we have had too much to do and not enough time. . . .We didn't plan enough released time. . . .We were unrealistic and should have planned for more staff time. . . ."*

- Many schools were disappointed with the quality or availability of software:

> *There is a real lack of quality ESL/Spanish software."*

C. What projects would do differently next time:

Many project leaders stated that they had tried to accomplish too much too quickly. They would be more conservative in their planning and establish timelines which were more realistic. Additionally, they would:

> *"Concentrate on teachers who are full of enthusiasm and give them the support they need.. . . .Try to involve more reluctant staff members early on. Some felt a little left behind. . . .Have more staff development.. . . .Buy more computers."*

VIII. Project Outcomes

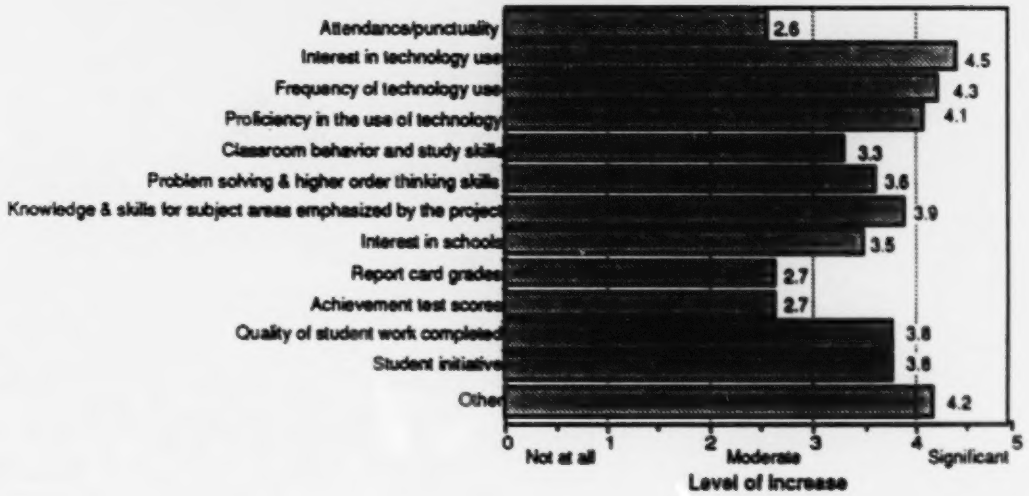
This section summarizes evaluation findings including outcomes for students, staff, and school programs. Outcomes are described in terms of increases in student performance to changes in instructional methodology resulting from the intervention of the project. This section also summarizes some of the practices and/or products targeted for continuation following termination of projects.

A. Student Outcomes

About one-third indicated that the project met its student objectives to a significant extent. Less than 30 percent indicated that student objectives were partially or not met. This was largely related to delays in implementation.

Respondents were each asked to rate the extent to which there were observable student changes in a variety of areas ranging from initiative to achievement as a function of their participation in the activities of their projects. The most significant student increases resulting from the project were interest in technology use, frequency of technology use, and proficiency in the use of technology. Other increases noted were classroom behavior, study skills, problem-solving skills, subject matter knowledge, interest in school, quality of work completed, and initiative. Areas of lesser change were attendance, report card grades, and achievement test scores. It should be noted that most projects did not evaluate impact by test scores. Instead, observations and portfolio assessments were the major sources of data used for determining student changes. The following chart illustrates the teachers ratings of student change.

Figure 14: Average Teacher Ratings of Student Change Resulting from Project Intervention



Project staff provided many examples of positive student change:

- *"Now that we have printers, the students write more. . . .Our students take more pride in their work. . . .Students use the computer as a tool ... not as a drill-and-practice machine."*
- *"Our staff survey showed that before the project 41 percent of our students used computers more than one hour per month. Now 92 percent do!"*
- *"Students' knowledge increased in physical science as measured by pre/post test, and writing skills integrated into science processes showed improvement."*
- *"Students have expanded expectations. The quality of their work is wonderful. They add graphs to their work."*
- *"Students are highly motivated to write, revise and edit their work."*
- *"They (students) are becoming skilled at trouble-shooting computer and software problems."*
- *"Students are producing quality written work that is displayed and shared."*
- *"Students gained problem-solving skills and higher order reasoning skills while working cooperatively."*
- *"Quality of student work was improved."*
- *"My students are very interested...their work is neat and corrections are made more easily...students frequently use the computers to finish their work."*
- *"Student proficiency in word processing and desktop publishing has increased significantly."*
- *"Attendance and punctuality improved on Lab day! The students come early and stay late to use technology ...we've seen improved behavior, an increase in self-confidence, improved cooperative effort and creativity and problem solving."*
- *"Kids developed enthusiasm for using equipment...they are enthusiastic about writing."*
- *"Students are in our library before, after and during school doing research...they love the electronic encyclopedia."*
- *"Students know how to use CD-ROM independently...they also use the modem and word processing with little instructional supervision."*
- *"Our students have a greater ability to focus on their work and an increased awareness of correct spelling and grammar...they are eager to work on the computer...their problem solving ability has improved through math games."*

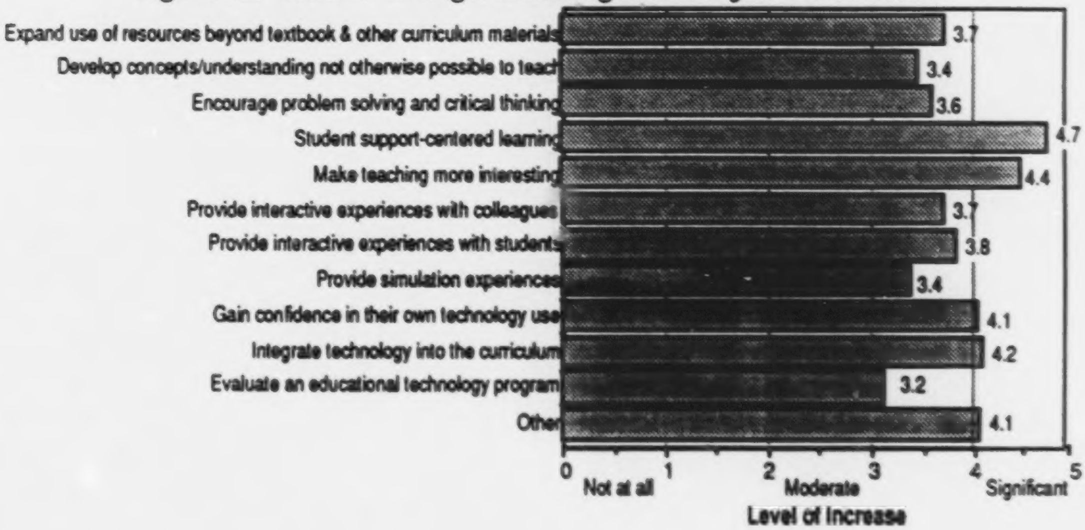
Overall assessment of project on benefits to students. Most respondents (81%) indicated that important benefits for students were attained through the project. Another 18 percent indicated that moderate benefits were attained which probably would not have occurred without the project. Less than one percent indicated that the benefits were not worth the effort or that some benefits for students were attained that could have been accomplished in other more cost-effective ways. In general, staff believe that the projects provided very important benefits for students and that such benefits are worth the time, money, and effort expended.

B. Staff Outcomes

Over one-third indicated that the project met its staff objectives to a significant extent, and 94 percent indicated that objectives were met to at least a moderate extent. Less than six percent indicated that staff objectives were partially or not met.

The most significant teacher changes reported as resulting from the project were increased use of student-centered teaching, increased interest in teaching, increased confidence in the use of technology, and increased integration of technology into the curriculum. Other changes noted as moderate to very moderate were expanding teaching resources beyond the textbook, developing concepts not otherwise possible to teach, developing problem-solving skills, providing interactive and simulation experiences with students, increased interaction with colleagues, and learning how to evaluate a project. The following chart illustrates the teachers ratings of their own change.

Figure 15: Teacher Changes Resulting from Project Intervention



Project staff reported many examples of teacher change resulting from the project implementation, some of which are reported here:

- *"Technology has moved from the lab to the classroom. . . .Our teachers do their own critique of software. . . .Teachers now look for software to support their teaching."*
- *"Teachers who in the past never touched a computer show no hesitation now."*
- *"Project planning and implementation provided team building."*
- *"Technology has become a real element in our curriculum, especially in grades 3-6."*
- *"Teaching the revising and editing aspects of the writing process was especially beneficial."*
- *"Teachers allowed students to become peer tutors and leaders in trouble-shooting."*

- *"Instruction has become more student centered – teaching is more interesting, as it provides students with a hands-on learning environment."*
- *"Laserdiscs were used extensively by science teachers."*
- *"Provided opportunities to mentor each other...there was a definite increase in confidence."*
- *"Awareness of ILS capability was increased and teachers' horizons were expanded."*
- *"Use of technology has expanded teachers' visions of what's possible...having technology on the campus improved teacher confidence."*
- *"Gave teachers a new mode of teaching...teachers and reading specialists interacted in planning presentations."*
- *"Teachers integrate library technology into student-centered assignments."*
- *"Cross discipline workshops provided an opportunity for teachers to interact and discover common/cross curricular content and teaching strategies."*

Overall assessment of project on benefits to staff Respondents were asked to consider the overall funding and effort of the project and select the statement that best represented the project team's assessment of teacher benefits. Most (79%) indicated that important benefits for teachers were attained and that the effort was clearly worth it and 20% selected the statement that moderate benefits were attained and probably could not have been attained without the project. Less than one percent indicated that the benefits were not worth the effort or that some benefits for teachers were attained but could have been accomplished in other more cost-effective ways. In general, staff reported that the projects produced very important benefits for teachers and that such benefits are worth the time, money, and effort expended.

C. Project Outcomes

Effects of Projects on state initiatives: Respondents were asked to report the extent to which the project facilitated the implementation of state initiatives such as learning resources management, school planning, and institutionalization of technology into the school program. Most project staff reported that the project had a moderate to significant effect on the management and coordination of learning resources. Effects on increasing staff familiarity with and use of the California Curriculum Frameworks were reported to be moderate. Most (60%) stated that many aspects of the project were incorporated into school plans.

Commitment to continue the project: Respondents were asked to indicate the extent to which the project is likely to become institutionalized and continued as part of the overall school instructional program. Many reported (41%) that the project would be expanded and about one-third (28%) indicated that most elements of the project would be likely to be continued in the school program. Nineteen percent indicated that all elements of the program would continue with 10% indicating that some parts would continue. No respondents stated that all aspects of the project would be terminated.

41

Following are some examples of the ways that projects have impacted school programs:

> *"We've added a full-time staff member to support our project for 1991-92.. . ."We've become more coherent in our technology use planning ... now we have a school-wide interest in grant writing. . . We've expanded technology into other subject areas."*

D. Unanticipated Outcomes

The project representatives were asked to share unanticipated outcomes for students, staff, and the school program.

- Unanticipated student outcomes included:

> *"Our students surprised us with the rapidity of their learning.. . . Some of our high-risk students excelled and became leaders ... while our supposedly computer-proficient students had difficulty designing the projects.. . . .Our 3rd graders produced 30 books for our library."*

- Unanticipated staff findings included:

> *"Although we had workshops, we found we needed more. . . .Six teachers who were frustrated by the lack of ESL software are taking a course enabling themselves to develop their own.. . . .We expected technology reticence. We got the opposite. All staff enthusiastically embraced technology."*

- Program changes include:

> *"We added a new unit for senior special education students incorporating resume and business letter writing. . . .Students wanted to select their own software and materials they needed for individual projects."*

E. Promising Practices and Products

Over three-fourths (78%) of the project representatives reported that the project had produced instructional procedures, practices, or products that warrant consideration for continuation and/or dissemination to other classrooms or schools.

- Some examples described in the Self-Assessment Inventory of promising practices are listed below:

> *"We found use of wordprocessing/desktop publishing/HyperCard stack technology with LEP students has been exemplary.. . . . Student-developed technology presentations have significantly enhanced our social studies curriculum. . . . .We have now included student published books as part of our circulating library.. . . .*

We have a new research format for honors biology... The fine arts program we developed will be replicated at the other district high school next year."

IX. Recommendations

A careful analysis of a project yields recommendations based on the quantitative and qualitative findings of the project. This section summarizes recommendations made by project staff aimed at guiding the school and district staff in planning the project's future, highlighting project elements that should be maintained and/or expanded with future funding.

Staff at each of the School-Based Educational Technology Projects were asked to write recommendations about their own projects as well as for the state implementation of educational technology. The following is a representative sample of the many comments submitted by over 275 projects from the first grant cycle.

A. Funding

- *"This AB 1470 Grant was extremely valuable in improving the curriculum, pedagogy and assessment methods in our math department."*
- *"By using AB 1470 funds we could leverage that money to obtain more in-kind support"*
- *"AB 1470 re-started the technology integration and it is important that it continue."*
- *"Successful projects should be refunded for a second year and possibly a third year.*
- *"Let districts carry funds over to the next year in staff development accounts."*
- *"Make funding available 2-3 years in a row."*
- *"Funding of the project should be two or more years because to bring about the effective change more time is needed to expand and experiment with the newly acquired skills."*
- *"Funding for projects already in place should continue for an additional year with the submission of a 'Stage II' plan."*
- *"There are not enough funding sources available to school sites for acquiring equipment."*
- *"Outside funding resources should be more easily accessible."*
- *"Project funding should be based on CBEDS for funded year. We reconfigured and gained almost 80 students."*
- *"It would be very helpful if the grant itself could expedite the purchase of computers in some way, or allow for time delays."*

- *"[The] state should send grant money in September in order that materials can be purchased and project implementation can begin as soon as possible."*
- *"We are pleased with the results so far and plan to expand the project next year with $3,000 of SIP money."*
- *"None of this project would have been implemented without AB 1470 money. We hope California will keep funding similar projects in the future."*
- *"We recommend that the application form remain as is and that the critical funding for technology in our schools continue."*

B. Implementation

- *"Provide increased support with software at K-2 for both the classroom and lab applications."*
- *"An administrator or coordinator who is not assigned to a classroom should facilitate project activities and evaluation."*
- *"Continue to support the flexible use of project funds to integrate technology into the curriculum."*
- *"Extend the grant implementation time to two school years to ensure all preliminary purchases, installations and necessary training can be accomplished. A year-long project incorporating staff and student involvement should not be limited...due to outside factors that are uncontrollable."*
- *"A two-year timeline with extra funds for implementation of staff and student activities...would ensure that both teachers and students would acquire the skills needed for ongoing use of technology. A one-year timeline has too many unforeseen constraints..."*
- *"Next year we should have enough data to determine if there has been a real improvement in student attitudes and critical thinking skills. These projects should probably be expanded to two years."*
- *"Continue implementation of project objectives and TUP utilizing expertise of experienced staff members to support those less skilled."*

C. Evaluation

- *"The time frame for evaluation is too short...a brief progress report at the close of the first 12 months with thorough but concise evaluation at the end of the second calendar year would be more appropriate."*
- *"Evaluation needs to be long range. One year is not enough time to determine impact of project."*

- *"The site committee recommends that this evaluation be delayed until later in the school year to allow for full and complete implementation of the project including the final evaluation."*
- *"Assessment of student work related to the project [should] be conducted after the initial funding ends."*
- *"Allow longer extension time for evaluation components."*
- *"Shorter evaluation document or more checklist items."*
- *"A valid formal evaluation should cover a three year period."*
- *"A possible suggestion...is a state evaluation form to be completed by participating staff."*
- *"Evaluate after the academic year is over."*
- *"Evaluation period to assess student gains must be given significant amount of time to be valid, perhaps 2 years. Also, more training and guidelines of how to set up assessment surveys, grades, tests, etc. in grant proposal stage would be helpful to final state evaluation."*

D. Curriculum and Planning

- *"Have projects already funded and successful available to those in planning process."*
- *"We found ongoing time for assistance and experimentation was critical to development of curriculum."*
- *"More funding time needed for planning time, staff in-service and purchase of additional equipment and instructional materials."*
- *"We commend the writers of the 1470 Tech Use Grant for devising a meaningful application that allowed us to assess our need, define our goals and objectives and implement a high quality technology program which significantly fosters learning."*
- *"The planning process was overwhelming, but certainly worthwhile. We 'gave birth' to a project which took many hours to formulate with much input from many sources. The planning time helped us to come up with a realistic project."*
- *"I believe that his project should be funded again to help expand the project into other curriculum areas (math, science, language arts)."*
- *"Expand the project to all grades, and all subjects...Keep the computer program flexible, allow teachers to use computers in areas of their choice."*
- *"The district and our school needed to work more closely together."*

- *"We could use some guidelines from the district in the way Portfolio Assessment will go."*
- *"The RETAC (ITV agency) contract allows the school to access to a variety of curricular materials. This will enable curricular areas other than the targeted areas to use more media and eventually expand into more technology usage."*

E. Staff Development

- *"A teacher incentive plan should be developed to encourage them to learn more about technology."*
- *"We found ongoing time for assistance and experimentation was critical to increasing staff comfort with technology."*
- *"Staff needs more in-servicing on the use of computers and laser disks."*
- *"Allow more funding for teacher training."*
- *"Staff in-service is vital to the success of the program."*
- *"More staff development on an on going basis is needed to upgrade and expand the use of technology."*
- *"On-going staff development to promote greater staff expertise and comfort with technology and its applications."*

F. General Comments

- *"Eventually, a computer should be placed in each classroom."*
- *"Every classroom should have a TV/VCR."*
- *"Strive to fully infuse technology into every classroom."*
- *"[There should be] the use of technology in the classrooms, not just the lab."*
- *"The library should be equipped with technological equipment for use by students for research and productivity, and for the librarian to ease her workload."*
- *"Acquire more video camcorders for authentic assessment taping of dynamic student work."*
- *"I would recommend one year for technical aspects and then allowing a second year for implementing the project into the curriculum and evaluating its impact."*
- *"We recommend more realistic model technology projects. We discovered their budgets were much larger, so consequently their projects seemed overwhelming to us. Perhaps using small schools with small grants as examples would be more realistic."*

- *"Educational technology will become one of four stands in our restructuring proposal."*
- *"Give some 'watchdog' agency the 'clout' to do something about districts that do not provide matching and in-kind funding."*

Student Survey Results

Approximately 700 student surveys were distributed to 23 AB 1470 School-Based Educational Technology Grant project sites including 14 elementary schools, four middle schools, and five high schools. The sample of schools chosen represented both large and small projects which were located in urban, suburban, and rural areas. At the elementary level, 247 of the 450 surveys distributed (61%) were administered by teachers at the sites and returned to CETAP. At the middle school/junior high level, 120 of the 135 surveys distributed (89%) were returned and 129 of the 135 surveys distributed to high schools (96%) were returned.

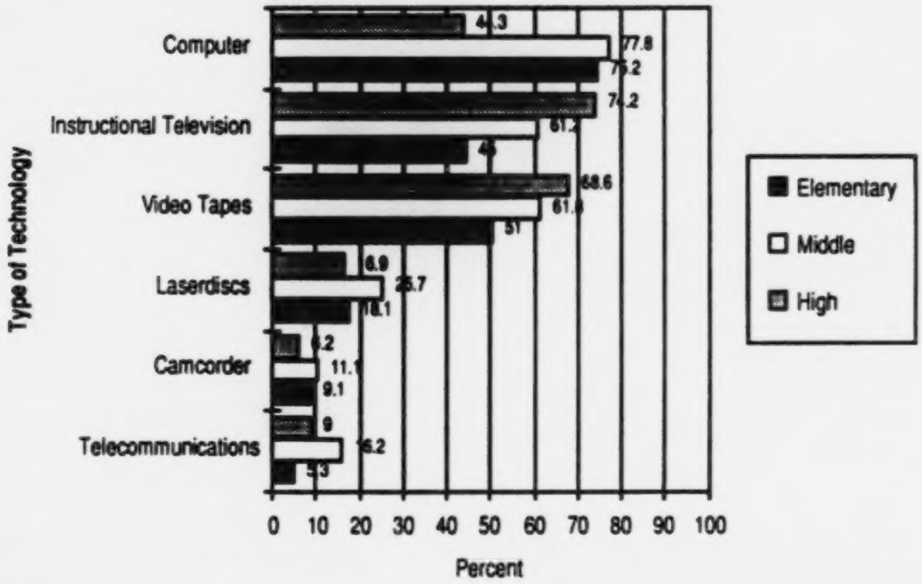
Technology Use

Elementary Schools: A variety of technologies were used in the projects surveyed. As shown in Figure 16, over three quarters of the students surveyed stated they used computers at least once per week and 29 percent of these used computers at least once a day. About half of the students used instructional television and video tapes once or more per week. Laserdisc players, camcorders, and telecommunications were used by a much smaller percentage of students.

The most common use of computers reported by students was for playing games (87%). Students may have considered some educational programs as 'games.' However, the implication is that students responding to this survey preferred a 'game' type of format when using the computer. Almost two-thirds use computers to do reports and assignments, 59 percent use a computer lab at school, and 28 percent use computers after school. About half of the students have computers at home.

Computers were most often cited as being used for English, writing, and reading instruction (87%). Computers were used to a lesser extent in math (61%), social studies (52%), and science (47%).

Figure 16: Percent of Students Using Technology at Least Once per Week



Middle Schools: Similar results were seen at the middle school level, except for a somewhat greater level of use of non-computer technologies. Seventy-seven percent of the students stated they used computers at least once per week and 29 percent of these used computers at least once a day. Sixty-one percent of the students used instructional television and video tapes once or more per week. Laserdisc players, camcorders, and telecommunications are the least used technologies at all levels. However, when they are used, the greatest use is at the middle school level.

Computers were used most often to complete reports and assignments (54%). About half as many students use the computers to play games at the middle schools than at the elementary schools. As in the elementary schools, 59 percent of the students have access to computer labs. Twenty percent use computers in the school library and 18 percent use them after school. Much fewer middle school students have computers at home (28%).

Computers were used about equally in English (51%), science (49%), and social studies/history/geography (43%). Only 18 percent said that computers were used in teaching math.

High Schools: Computer use was much lower at the high school level and the use of instructional television and video much higher. Less than half of the students used computers once per week or more, and only 21 percent used them on a daily basis. Almost three quarters stated that instructional television was used at least once per week, and just over two thirds said that video tapes were used on a weekly basis.

Most students (80%) used computers for reports and assignments, and 56 percent use them to play games. Forty percent of the students have access to computer labs, and 41 percent use computers in the school library. Thirty percent use computers after school, and over half have one at home.

Computers were used most in science (52%), social studies/history/geography (47%), and English (40%). Only 14 percent of the students used computers in math classes. Computers were used by a few students in elective classes such as art, foreign language, business, and computer education.

Impact of Technology

Elementary Schools: More than half of the students reported computers had significantly improved their abilities in studying and more than a quarter reported that computers had improved their abilities "a lot." An even greater number of students stated their writing abilities had been improved – almost two thirds noticed significant improvement. Very similar improvements were seen in reading and problem solving.

Most of the students believed their grades had improved as a result of using technology. Only 14 percent stated their grades had not improved. Science grades improved the most, followed by English/writing/reading, social studies, and math. A majority of students (75%) also reported that they enjoyed these subjects more as a result of using technology.

Other significant areas of improvement were: ability to work with others (cited by 80%), self esteem (70%), and attitude about going to school (70%).

Middle Schools: Most of the students surveyed (89%) indicated that technology had a positive effect on their abilities in studying, and over half stated their study habits were significantly improved. The greatest change noted was in writing abilities – almost three quarters of the students surveyed reported that technology had made a significant improvement, and a third stated that their ability to write had been improved "a lot." To a lesser extent, reading and problem solving skills were also improved.

An overwhelming majority (92%) of students believed that using technology had improved their grades. Social studies/history/geography grades were stated to be improved the most, followed by science, English, and math. Most students (80%) also enjoyed going to these classes more after the introduction of technology.

Other significant areas of improvement were: ability to work with others (cited by 92%) and attitude about going to school (75%).

High Schools: Fewer students (36%) reported that technology had significantly improved their study habits. The percentage who indicated significantly improved writing skills (53%) was also smaller than at the elementary and middle schools. About half of the students reported a significant improvement in their problem solving skills.

Over three quarters of the students surveyed believed that technology use has caused their grades to improve. As in the middle schools, social studies/history/geography grades were stated to be improved the most, followed by science, English, and math. Very few students reported that technology use had improved their math grades.

Sixty-two percent of the students reported their ability to work with others was improved through the use of technology.

Student Comments

Elementary Schools: Students were asked to describe how the increased use of technology at their school has made a difference for them. Many students (35%) stated technology use had made school and learning more enjoyable. One third grader reported:

> *"It (technology use) has made me more interested in going to school because we do lots of fun things that I've never done before."*

A number of students also reported that computers made learning easier. Many cited writing as an example. Another third grade student stated:

> *"I think computers are great for us. You can fix mistakes, and do them over again. I'm going to get one next Christmas."*

Several enthusiastic primary students drew pictures of themselves using a computer.

Middle Schools: Improvements in student attitude and motivation were shown by the many comments (32%) related to technology making school and learning more enjoyable. An eighth grade student reported:

> *"It (technology) makes a difference for me by making it more fun to learn and not fall asleep by being bored."*

Many students said technology makes learning easier, especially research and reports. For example, a sixth grader stated:

> *"The increased use of technology has made a difference for me because when I didn't understand something on the laserdisc, it shows more about it. It also is a fun way of learning for me and it makes me want to get up in the morning to go to school. It's improved my science grade a lot and now I like learning about science."*

Several students reported that technology enabled them to do new things and to learn in unusual ways.

High Schools: Forty-two students (33%) described computers facilitating the learning process. An eleventh grader stated:

"The use of a graphing program in math (trigonometry) greatly increased my knowledge of how changing a coefficient could change the graph. This would not have been possible if I had to graph the points alone."

The ability to learn in new ways was also reported by several students. For example, a tenth grader wrote:

"It (technology) gives us the opportunity to experience new ideas and ways of learning."

Another common response was that technology had made school more enjoyable. One ninth grade student reported:

"I enjoy working with computers. In a way, they make learning fun. And being able to use a computer will help me throughout my entire life."

Several other students also reported that the technology use at their school was good preparation for a "technology oriented world," as one student put it.

At the high school level, there were a few negative comments, including

"It (technology use) has made no difference. Our school is just wasting money that we don't have on more computers" .

Another similar comment was:

"Technology has helped to improve our school, but getting a $96,000 grant for computers is ridiculous. Where are we placing our priorities? How about $96,000 to improve or get activities (such as developing a drama program, etc). Sports programs and technology shouldn't be the number one priority in our school."

Comparison Between School-Based Grant Sites and Non-Grant Sites

Technology Use

Elementary Schools: Fifty-two students at a non-AB 1470 funded elementary school were administered the same student survey as those at the 14 School-Based Grant sites. As would be expected, students at the School-Based Grant sites have much greater exposure to technology. Sixty-three percent more students report that they use computers in class at least once per week, 29 percent more view television programs in class, 56 percent more view videotaped programs, and almost three times as many use interactive laserdiscs.

Students also use computers much more after school, at lunch, and at home. Almost four times as many students at the School-Based grant schools use computers to do reports and assignments.

A large difference was seen in the number of students using computers in science – 47 percent at the School-Based Grant sites versus 2 percent at the comparison school. Gains were observed in the number of students using computers in English/writing/reading (348% more than at the control site), math (187% more), and social science (573% more).

Middle Schools: Seventy-eight students at a middle school which has not received any technology grants were administered the same student survey as those at the four School-Based Grant sites. The differences in technology use were even greater than those observed at the elementary level: more than twice as many students use computers in class at least once per week, 45 percent more view television programs, 72 percent more view videotaped programs, and six times as many students use laserdiscs.

At the School-Based Grant sites, four times as many students use a computer lab and 14 percent more use computers to complete reports and assignments.

Very large differences were seen in the number of students using computers in math and social science (Over ten times more than at the control site). Smaller but still noticeable gains were observed in the number of students using computers in English/writing/reading and science (about twice as many as at the control site).

High Schools: Fifty-four students at a non-project high school were administered the same student survey as those at the School-Based Grant sites. Though this school has not received any grants for technology use, computers are used extensively in its science department. In fact, a greater number of students use computers at least once per week at this school than at the School-Based Grant high schools surveyed. However, other technologies are used to much greater extent at the School-Based Grant sites. Four times as many students view television or videotaped programs once per week or more and nine times as many students use interactive laserdiscs.

Students also use computers more after school, at lunch, at the library, and at home. Thirty-one percent more students at the School-Based Grant high schools use computers to do reports and assignments.

Large differences were observed in the number of students using computers in English and math (about twice as many at the School-Based Grant sites) and social science (six times as many). As mentioned above, the comparison school had a computer-oriented science program so more students there actually used computers in science than at the School-Based Grant sites.

Impact of Technology

Elementary Schools: Students at both the School-Based Grant sites and the comparison school gave high ratings to technology's improvement of their academic ability, grades, attitude and interest, self-esteem, and ability to work with others. However there was a higher frequency rate at the SBG schools. For example, at the School-Based Grant schools. 32% more students reported use of technology as the reason for increased interest in history-social science. 25% more students reported improvement in their grades to technology use and 18% more students indicated increased enjoyment in the areas of English writing and reading.

These findings suggest that even students with limited access to technology place a high value on its use in school and feel that it improves their performance and motivation. The larger number of students who reported that their grades in English had improved reflects the fact that this was the most common subject emphasis for the School-Based Grant projects.

Middle Schools: While students at both the School-Based Grant sites and the comparison school gave very positive ratings to technology's improvement of their academic abilities, the School-Based Grant student ratings were considerably higher overall. The biggest difference was in writing, with 78 percent more students stating that technology had improved their abilities. Fifty-three percent more students reported that their study habits had improved.

At the School-Based Grant sites, twice as many students reported that technology had improved their ability to work with others, 55 percent more reported that their grades had improved, 77 percent more stated that their attitude and interest in school had improved, and 61 percent reported better perceptions about themselves after the introduction of technology. Many more students at School-Based Grant sites reported that technology had increased their enjoyment of math (twice as many), history-social science (90% more), science (69% more), and English (56% more). Similar but even greater differences were seen in student ratings of how much their grades had improved in these subjects.

It appears that, at the middle school level, increased access to technology has had a dramatic effect on student ability, attitude, and grades.

High Schools: Students at both the School-Based Grant sites and the comparison school gave very positive ratings to technology's improvement of their academic ability, grades, attitude and interest, self esteem, and ability to work with others. The only significant differences were in history-social science (62% more School-Based Grant students enjoy this class more with the use of technology and 49% more stated that their grades had improved) and English (32 percent more stated that their grades had improved).

Student Comments

Elementary Schools: Many more students at the School-Based Grant sites (24% vs. 2%) commented that computers made learning easier. Also, twice as many stated that their motivation and interest in school had improved. The distribution of other comments was very similar between the two groups.

Middle Schools: The difference between the School-Based Grant sites and the comparison school was that 39 percent of the comparison students stated that technology use at school had made no difference while less than 2 percent of the School-Based Grant students made this sort of comment. As at the elementary level, about twice as many students stated that their motivation and interest in school had improved after the introduction of technology. An increase was also seen in the number that commented that technology facilitated doing research and reports.

High Schools: Twice as many students at the School-Based Grant sites commented that computers made learning easier. Also, three times as many stated that their motivation and interest in school had improved.

Teacher Survey Results

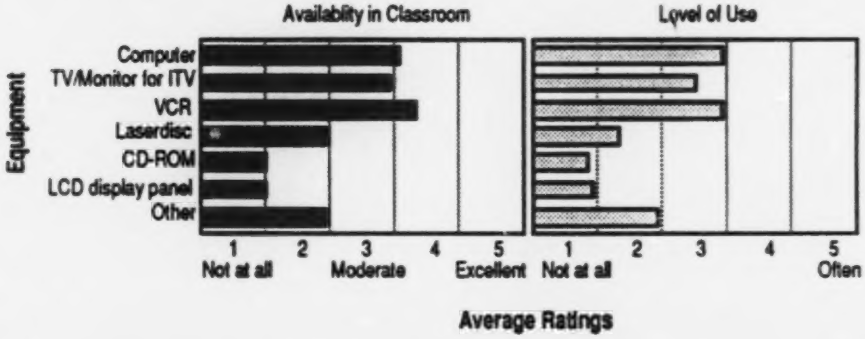
I. Background

Approximately 500 teacher surveys were distributed to a sample of AB 1470 School-Based Educational Technology Grant project sites. The sample of 25 schools was chosen to represent both large and small schools and projects that did and did not adopt Level II MTS programs. The sample included schools located in urban, suburban, and rural areas. Overall, 64 percent of the surveys were returned. Of these, 53 percent were from elementary school teachers, 24 percent were from middle school teachers, and 23 percent were from high school teachers. Forty-two percent of the surveys returned were from projects which had adopted or adapted programs or practices developed by Level II MTS projects. Over half (55%) of the teachers stated that they were directly involved in the implementation of the project at their schools, 32 percent were indirectly involved, and 12 percent were not involved.

II. Access and Use of Technology

Teachers were asked to rate the accessibility and use of various technology equipment on a five- point scale. As shown in Figure 17, VCRs were most available in the classroom, followed by computers, television sets for ITV, and laserdiscs. With the exception of laserdiscs, teachers seem to fully utilize the available equipment as seen in the level of use ratings which were all very close to the availability ratings. About half of the teachers stated that computer availability in the classroom was "excellent", and about 40 percent stated that TV and VCR availability was "excellent."

Figure 17: Availability and Use Level of Technology Equipment



A moderate to significant increase in the use of computers and VCRs over the last 3 years was reported by teachers. However, it is not known whether this increase can be fully attributed to the implementation of AB 1470 projects.

III. School Use of Technology and Benefits

Almost all (90%) of the teachers stated that their school includes technology use in its School Improvement (or other) Plan. Only three percent were sure that technology use was not included. About two thirds of the teachers were involved in planning for technology use at their schools. Involvement ranged from attendance at technology planning meetings to writing grant proposals for technology funding. Most teachers (80%) reported that the AB 1470 project at their school had greatly facilitated school-based planning. Teachers also indicated that the projects had a significant positive effect on the integration of technology with the curriculum

(73%), staff development for technology use (73%), and the inclusion of technology in the school plan (75%).

Teachers placed a high value on the use of computers to support the instructional program, followed by instructional television, and multimedia. Teachers surveyed reported that students and administrators value the use of these technologies in school more so than parents and other teachers.

Almost all respondents (89%) stated that their schools benefited greatly from the School-Based Grant Project. The remaining 11 percent believed the school had received moderate benefits. Few teachers were satisfied with the level of funding for technology use at their school – only 11 percent indicated that it was adequate.

IV. Student Impact

The biggest improvements in student behavior noticed by teachers were in interest and attitude, initiative and pro-activity, time engaged in assigned work, ability to work collaboratively in groups, and academic performance. Most teachers, however, were unable to say whether or not technology had improved the report card grades of their class as a whole. A little over a third of the teachers reported that grades had definitely improved, 20 percent reported they had not, and 46 percent were unsure. In contrast, over three-quarters of the students surveyed reported that the use of technology had improved their grades. The teachers who indicated that grades did improve after the introduction of technology reported, on average, that 40 percent of the students' grades had gone up by one or more grade points.

Teachers were asked to tell about a specific student in their class whose grade had been improved by technology. Many teachers told stories of low-achieving or at-risk students who suddenly took an interest in school after the introduction of technology. One middle school teacher wrote:

> *"Student was at-risk – very poor attendance, always involved in poor citizenship. He seemed to have very poor self-esteem. He had never had an opportunity to work with higher level thinking/problem solving. He was a prime candidate for failure.*
>
> *Once he became involved with technology he took right off. His self-esteem was enhanced by tutoring other students in the use of technology. He has since created HyperCard stack tutorials for all of my classes. He teaches others to use the laser player and will be involved next year as an eighth grade in designing tutorial tapes and programs for the entire science department."*

Quite a few teachers described how word processing had greatly increased students' motivation and ability in writing. One teacher described a student who never had turned in any hand-written work. After being introduced to the computer,

> *"He wrote a short story and six essays. With a computer he had the ability to correct his paper without re-copying and to print out his paper in various ways, both of which increased his productivity. Without the computer in class, he would not have succeeded."*

Another common story told by teachers was that of a student with a physical or learning disability who was able to succeed through the use of the computer. One special education teacher stated that most of her students refused to write before the introduction of a children's word processing program. She went on to describe a particular student:

> *"I have a student who is significantly delayed in language usage. He is also learning disabled. When this student first came to my class as a fourth grader, he could not name letters of the alphabet or even generate a complete sentence. He was, however, very interested in using the computer and picked up the basics quickly which raised his self-esteem. The computer was a terrific motivator. He would begin to dictate sentences to us so that he could enter them into the computer. He is now writing his own sentences."*

In general, teachers indicated that the introduction of computers increased student motivation and desire to learn, improved the quality of work produced, and allowed them to reach students who had previously "just taken up space in the classroom."

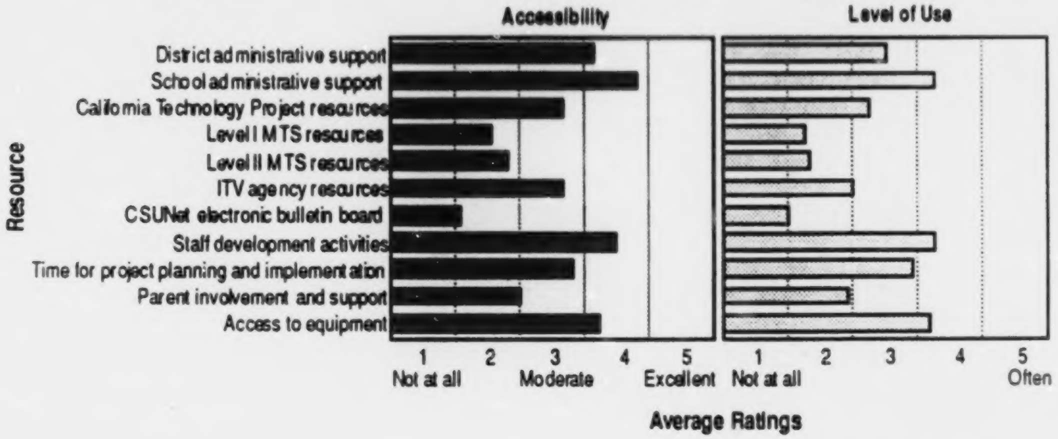
V. Teacher Impact

Teachers stated that technology use had caused a substantial increase in their ability to support student-centered learning, instruct their class(es), develop units/lessons, and improve their skills through staff development. Moderate increases were seen in other areas, including use of the state curriculum frameworks, managing learning resources, collaborating with other teachers, assessing student progress, and planning for specific student needs.

VI. Support Resources

Teachers were asked to rate the accessibility and use of various support resources during the implementation of their project. As shown in Figure 18, teachers utilized most resources to the same extent that the technologies were available. School administrative support for project activities was the most accessible source of support, rated as "excellent" by 58 percent of the teachers surveyed. Staff development and equipment resources were also highly accessible to teachers while implementing their projects. The TRIE telecommunications service, though theoretically available to all educators, is very limited in use due to a shortage of modems and phone lines in the classrooms – only two percent of the teachers surveyed use it regularly. Among the adopters of Level II MTS programs and practices, the resources of these projects seem to be underutilized. Close to half of the teachers whose projects were adoptions indicated that Level II MTS resources were not available at all and close to two-thirds had not used them.

Figure 18: Accessibility and Level of Use of Support Resources



Comparison Between School-Based Grant Sites and Non-Grant Sites

Fifty-seven teachers at non-AB 1470 funded schools (one elementary, one middle, and one high school) were administered the same survey as those at the 22 School-Based Grant sites studied. In general, teachers at the School-Based Grant projects reported much better access to technology, greater use of resources, more involvement in planning, and greater benefits from technology use for both students and teachers. Teachers at the project sites were much more aware of the California Technology Project and ITV regional agencies and made much greater use of their services.

Access and Use of Technology

Teachers at the School-Based Grant sites reported significantly greater access to all technology resources. The differences in access ratings, from grant to non-grant sites, ranged between 26 percent for TV sets for ITV viewing to 50 percent for CD-ROM drives. The teachers' ratings of their level of use of these items showed similar differences, ranging from 13 percent higher for VCRs to 80 percent higher for laserdisc players at grant versus non-grant sites. Teachers at the School-Based Grant sites also reported that their use of technology had increased significantly over the last four years.

School Use of Technology and Benefits

There was a 166% difference in the number of teachers who reported that they had been involved in planning for technology use at their school at grant versus non-grant sites. This appears to indicate that the requirements of the School-Based Grant application process effectively stimulates teacher involvement in technology use planning. Teachers at the grant sites gave much higher ratings to the level of emphasis placed on school based technology use planning (110%), district technology use planning (78%), management of learning resources (84%), technology integration (122%), staff development for technology use (141%), and inclusion of technology in the school plan (110%).

Teachers at both grant and non-grant sites placed similarly high values on the use of computers, ITV, and multimedia to support the school program. Teachers at all sites stated that parents, students, administrators, and other teachers placed a high value on technology use. Teachers at the grant sites reported that their schools had benefited much more from the use of technology than did teachers at the comparison sites (73% increase in ratings).

Although teachers at both the School-Based Grant and comparison sites stated that funding for technology was insufficient, those at the grant sites reported that it was much more adequate (80% difference in ratings).

Student Impact

There was a moderate difference in teacher perception of the degree to which technology caused an improvement in student performance and behavior between grant and non-grant sites. The largest differences were in time engaged in assigned work, initiative and pro-activity, and ability to work collaboratively in groups.

A significant difference (34%) was seen in the number of teachers at grant sites who indicated that the report card grades of their class as a whole had improved as a result of technology use.

Teacher Impact

The biggest differences seen at the School-Based Grant sites were in staff development (33% higher ratings), working collaboratively with other teachers (31%), and use of state curriculum frameworks (25%).

Support Resources

School-Based Grant projects encourage teachers to make better use of district, school, and outside support resources. With the exception of the CSUNet electronic bulletin board (TRIE), teachers at the grant sites versus the comparison sites, reported much greater access to and use of all support resources, especially access to equipment (280% higher), use of time for planning (143%), use of staff development (131%), use of school administrative support (118%), use of California Technology Project Resources (108%), and access to ITV agency resources (138%).

Telephone Interview Results

In order to obtain more detailed information on the progress and effectiveness of the School-Based Educational Technology Projects, telephone interviews were conducted with 30 of the 321 funded projects. Projects were randomly selected from each of the 10 state regions, proportionate to the number of grants within each area.

Description of sample: The schools were in suburban, urban, and rural settings. They ranged from a two-room rural elementary school serving 44 students to a large urban high school with a student population in excess of 2500. Two projects were multiple site efforts; all others benefited a single school. Grants varied in size from $3,100 to $62,000. They covered all areas of the curriculum, with the heaviest concentration in English-language arts. 60 percent of the projects reported that they had previously received grants for technology, but a full 40 percent had not. Although the projects included the full spectrum of educational technology, one measure of the differences among the schools is the number of computers that each possessed prior to the grants. One school had one computer for every 11 students while another reported one computer for every 423 students.

Interview process : The interviews were conducted during April and May 1991. Each interview followed a structured format and lasted between 20-45 minutes. Several projects had experienced personnel changes and reassignments. In all instances, the project contact person was cooperative with the interviewer and generous with their time. School personnel seemed to take the position that they were accountable and had a responsibility to report on the outcomes of their projects. Their comments were frank and detailed, in spite of the fact that many schools lack the facilities for adults to conduct private, lengthy telephone conversations.

The interviews explored five aspects of the projects:

1. Planning
2. Level of Implementation
3. Evaluation
4. Outcomes
5. Conclusions

I. Planning

All projects reported that technology has been incorporated into their school planning process and written planning documents as a result of the grants.

A. Why did your school apply for this grant?

Curriculum improvement and the desire to integrate technology : Schools elected to apply for the grants for two main reasons. Some schools were responding to specific instructional and learning needs that had been identified by the staff and documented by test scores and Program Quality Reviews. Their projects tended to be more subject specific.

> *"Our purpose was to proliferate technology throughout the science department and then on into social studies."*

Others were less driven by specific curricular needs or student needs. They saw the grants as a way to get started with technology or as a means to improve their use of educational technology.

"Ours is an old school with an older faculty. Only 5-10 percent of the staff had ever put their hands on a computer. We knew we had to get going."

Varied leadership for application: The impetus for applying came from a variety of individuals or groups. In some schools one teacher had the vision and influence to encourage their colleagues to apply. In others a specific group or grade level of teachers pushed for the proposal to be developed. Principals took the lead. School Improvement, Technology, Chapter I and other school-wide committees spearheaded the effort at some sites.

B. How planning for the Technology Project has been incorporated into existing school-level planning:

Technology planning incorporated at every site: Every project reported that it had incorporated technology into its planning. The application process itself seemed to have forced schools to examine their instructional strategies and identify how educational technology could enhance and strengthen teaching and learning. One school noted that:

"Prior to the grant, we didn't have any technology in our school plan. Now it has become the main focus."

Others stated:

"The grant proposal acted as a real good blueprint.. . . . This grant has been a real godsend. Now we have the equipment and are getting the training. Our project began in math but has quickly spun off into all curricular areas. Every classroom now has its own computer and printer . . . .We now consider our plan differently. We want to integrate technology in all areas. . . .The grant has helped set our priorities. We have attracted support from other sources and received contributions that we never would have without this impetus."

Project leaders mentioned specifically that technology has been tied into:

- SIP
- SB 1882 efforts
- Chapter I
- Special Education Master Plan
- Teachers' objectives

Project leaders noted that the grant had expanded their planning efforts affording more involvement with the community and parent groups, and one said that the "good group process" had resulted.

"During the planning for this grant, [an industry partner] assisted us. He had a big impact on the process, giving us an informed perspective on where we were and where we needed to go. We have now asked him back to help us with our application for a restructuring grant. We are trying to tie everything together."

C. How educational technology has been incorporated as an educational strategy:

Technology integrated into the curriculum: Projects reported that technology has begun to be integrated and, in some cases, spread into other subject areas not initially intended during the planning.

One teacher stated:

> *"More people are looking at technology as part of their teaching in the subject areas."*

Another leader's comments were typical of the responses obtained during the interviews:

> *"Prior to the grant, there was little use of technology. Students were learning about how to use computers in a lab for 20 minutes per week. . . Now computers are used in classrooms, and we have added another dimension to our program."*

II. Level of Implementation

A. Contributions to curriculum alignment:

Opened the door to interdisciplinary curriculum:. Every project contact person stated that the grants had moved their schools and programs closer to alignment with the state frameworks. The most frequent examples given were:

- Increased cooperation and integration across subject areas
- Interdisciplinary curriculum
- Writing across the curriculum

Teachers reportedly now use new technologies to extend textbooks and have gained a greater awareness of what the state frameworks are all about. One teacher commented that her colleagues were:

> *"....working in interdisciplinary teams, exceeding their plans and expectations. History/social studies and language arts teachers work together on student research projects, and science teachers have tagged into this too.. . .Science teachers also want students to write reports with the support of the language arts department."*

B. Availability and impact of staff development:

A critical factor: Staff development was seen as a critical factor by most of the project leaders. A wide range of training content and format can be found across the thirty projects. Some teachers embraced the training with more enthusiasm than others, but all indicated that staff development was essential to the integration of educational technology into the curriculum and instructional practices.

Wide variation in delivery: Staff development delivery differed widely from project to project. Staff training was provided by school staff members, district personnel, as well as outside experts. Examples of common practices include:

- In-services for the entire staff were held in the summer, after school, during release time, on weekends, and during staff meetings after school. Even during lunch-time, "mini-lessons" were held to acquaint staff with specific equipment, such as a camcorder.
- In-service only for a portion of the staff, selected either by subject area, grade level, or readiness to accept and learn about technology.
- Teachers were sent to conferences, including Computer-Using Educators (CUE).
- Project leaders gave demonstration lessons in classrooms and in computer labs.
- Support was provided by MTS Level II projects.
- All day workshops were provided.
- Trained 8th grade students worked as assistants to teachers.
- Trained two teachers per department who then lead and trained others.
- Trained off-site.
- Aides and parents were also trained.

Two interesting comments about staff development were:

> *"Since teachers now have their own computers in the classrooms, after the training they go back and use them." . . . . "The biggest step was to train teachers to use computers in the classroom rather than relegating their use to a lab."*

Staff development was not without obstacles: Staff development did not, however, always go smoothly or according to plan. The two biggest barriers to training were:

- Delays in obtaining equipment which got projects off to a slow start (6).
- Teacher reluctance or resistance (5).

Some comments that confirm the difficulty of creating change in teacher attitude and practice include:

> *"We planned more in-service than they were able to implement because teachers were not as receptive as we had hoped. . . . Teachers don't want to use release time and be away from class. . . . We were overoptimistic about getting staff trained. . . .Teachers didn't want to participate in training even when they were offered stipends for attending on Saturdays. . . .We ran into resistance even though we had release time and stipends, so we didn't spend as much time as we wanted to. . . . It involved more work than we thought it would. . . .We had to make a lot of changes to our original plan due to the variations of teacher reaction.. . . Some teachers find it hard to see technology as a tool. . . .Technological problems occurred during in-services, further intimidating novice users."*

C. Improvement of learning resources management:

Little evidence to verify improvement: Although schools responded that the grants had helped them in this area, few were able to give concrete examples to verify their claims. Projects that were focused around the library/media center were the exception. Those projects tended to be more comprehensive and school-wide. The project leaders were able to describe how they had reorganized or restructured their resources to make them more known and accessible.

D. Outside resources used to support the project:

A helping hand from a variety of resources: Some schools were fortunate enough to have an inspired and technologically skilled staff member who was able to guide the project and train others. Most schools, however, looked to outside resources for support. The resources commonly mentioned were:

- District office staff
- Software and hardware vendors
- California Technology Project
- Model Technology Schools Level II projects
- County office resources
- Instructional television
- TRIE (CSUNet)
- CSU (Humboldt)
- Cal Tech
- California Literature Project
- Other schools

5. Changes from initial budget:

Most schools reported no change from the initial budget. Changes that did occur included:

- Districts provided additional funds. One district increased its in-kind contribution with $6500 in furniture and additional software.
- Schools provided additional funds from other state and from federal sources to augment budgets and purchase more equipment
- Parent groups provided additional funds (2).

> *"Our PTA really rallied and provided funds so that every classroom could have a television."*

One school reported that the district did not purchase the equipment that it had promised, a deficiency that weakened their project.

III. Evaluation

In their proposals, many schools described quite elaborate and sophisticated evaluation plans. However, this appears to be the area they were least able to achieve, perhaps due to:

- Late starts in getting projects fully underway
- Overly ambitious evaluation plans
- Insufficient staff time and staff to carry out the evaluation
- Inexperience in formally evaluating program results

Apparently, school staff underestimated how time-consuming a thorough evaluation can be. They laid out very labor intensive and complex strategies and then found them impractical to carry out.

A. Evaluation Strategies Implemented:

A wide variety of evaluation strategies were employed, most of which were informal and anecdotal: School staff did engage in a wide range of evaluation activities, including:

- School technology committees discussing and reviewing progress
- Samples of student work portfolios, journals, newsletters
- Informal monitoring and observation
- Surveys of teacher attitudes and perceptions
- Administrators observing and monitoring implementation

> *"The principal kept a binder from day one. She made notes at every meeting and kept records of everything that happened, documented every step."*

- Staff meetings to discuss progress
- Maintaining logs of project activity and equipment use
- Teachers exhibiting technology use
- Writing evaluations of training
- Informal sharing and discussions
- Teachers observing one another
- Teachers keeping journals
- Standardized test scores
- Formal mid-year assessment
- Teachers observing student progress
- Student surveys
- Parent surveys and parents asking for feedback
- Each teacher writing an evaluation of their work
- Writing quarterly reports
- Students writing evaluations
- Hiring a consultant to help
- Pre and post writing samples using district rubric to measure growth

The evaluation requirement prompted project participants to assess their results: Several project contact people commented that the requirement to evaluate was directly responsible for their assessment efforts. One person remarked:

> *"Knowing that evaluation was required gave me some leverage with the staff."*

Outside support of evaluation efforts was appreciated: Project leaders praised the support they received. They specifically mentioned how helpful their local CTP's had been, citing the evaluation seminars in particular. While some found it too long, they found the Self-Assessment Inventory useful:

> *"The Self-Assessment Inventory helped give us an 'outside look.' Using the instrument to review our project, we found that we had accomplished far more than we thought. It was a good reflection tool. . . .It gave us a good opportunity for reflection.. . . We were able to think back on all that had been accomplished. . . .The Self-Assessment was great. I don't know what I would do without it - allows me to be more objective."*

B. Changes from the proposed evaluation plan:

The typical modification from the proposed evaluation was less implementation of planned evaluation. Four projects indicated they had not implemented it at all because their projects were just getting underway.

IV. Outcomes

A. Student outcomes:

Project contact people were enthusiastic about student outcomes. In many cases, students had exceeded their expectations.

Increased motivation and interest: The most notable student outcome was increased motivation and interest in learning, which was reported by fully 50 percent of the projects.

> *"Students are so motivated that they don't even look up. That's why we teach.. . . They are doing things that are relevant to them."*

Teachers have noticed increased self-esteem and self-confidence. One principal remarked:

> *"Students are more aware of the world beyond their community."*

Improvement in writing: The next most common outcome was improved writing skills. Project leaders commented that students had improved in the following ways:

- Writing more often
- Better quality of writing
- Increased writing fluency
- Increased creativity

Here is how three teachers described this result:

> *"Teachers can't believe how students' writing and reading has improved... They are amazed. We haven't seen another intervention that has been as successful. . . . There has been a plethora of writing. First graders can operate computers and do a one-page story using word processing and built-in graphics.. . . In fact, the first graders are writing about how much they will miss the lab when they graduate out of the program. . . . Each year a literary magazine is produced.. . . With the new technology, it was made so much easier and went so much more smoothly."*

Gains in other academic areas: Student improvement was also noted in other areas of the curriculum. Comments included:

> *"All (elementary level) students can use resources of the media center to conduct research.. . . .Students are much more willing to do research because it is so much faster to retrieve information.. . . . Kids are so visual due to their TV habits that the speed of access is critical. . . .We have kids in the library media center using the resources that we never would have expected to see."*

Other improvements noted were:

- Greater understanding of scientific principles
- Made science more interesting
- Oral language improved
- Increased critical thinking skills
- Obvious change in attitude in social studies
- Higher CTBS scores

Greatly enhanced technical skills: Not surprisingly, students also acquired new and improved skills with the equipment itself that was provided by the grant. Teachers indicated that students are more in control of their learning. Typical comments were:

> *"Before kids saw computer lab as drill and practice or another video arcade. Now they see computers as a learning tool. . . .Many more students are using computers. Now most have had experience with computers for a specific purpose. . . Students more comfortable with computers and other equipment."*
>
> *"We are amazed that students have developed such a facility with the video camera. . . Most students can operate a laserdisc player. . . .A lot of our kids have had little or no exposure before this project. . . The visual impact of laserdisc technology is especially effective for some students."*

Too early to tell: Because some projects did not really start until late in the year, three projects reported that they could not yet assess the impact on students.

B. Teacher outcomes:

The impact on teachers was described in even more detail than the impact on students. This may be due to the fact that the focus of the projects was, in many ways, on the teachers themselves during this first year. Once again, teachers exceeded the expectations of the project leaders.

Increased interest and motivation in using technology: Due to the training and availability of technology, teachers from the project schools significantly increased their interest and desire to use technology. Every project (30) mentioned some form of growth in motivation. Specifically:

- Awareness has been increased.
- Higher level of interest in computers and technology was evidenced.
- Increased comfort level and more confident in using technology was reported.
- More excited about computers and educational technology.
- Seeing and using technology as a tool was important to teachers.
- Teachers wanted more equipment and more training.

Project leaders commented:

> *"Teachers aren't feeling threatened .... The project hasn't been as time consuming as they feared.... They feel 'they can do it.'... I attribute this to the fact that the project is a complete package with equipment, software, and in-service.... Our teachers have been infected with students' enthusiasm... Teachers are beginning to see ways to translate more traditional methods using technology.... Teachers have always recognized the value of technology, but they were afraid.... They have gained confidence due to the availability and staff development."*
>
> *"Teachers have bought computers for themselves! ... One teacher who was a 'technophobe' became one of our most eager proponents for technology in the classroom.... Our new equipment is always in use.... Teachers have seen that it isn't scary.... The project has helped overcome teacher reticence.... Some of the older teachers have really come around."*

Technology incorporated into teaching: The second outcome noted most frequently is that teachers are discovering how to incorporate technology into their teaching (10). Project leaders noted that teachers are now looking for ways to use technology in other subjects.

> *"Teachers now see what they can use computers for as part of the curriculum."*

Increased flexibility and variety in instruction: Teachers are reportedly:

- Making instruction more individualized
- Using equipment and materials that they never had before

- Changing their attitudes about subject areas such as history-social science that they used to see as drudgery
- Producing class newspapers
- More flexible in the ways they present instruction

One comment that illustrates that new techniques are being used was:

> *"The video tape has become a very effective teaching tool. Students and teachers get immediate feedback. The teachers are able to send tapes of the classroom home so that working parents can feel more a part of the child's education. 'A Day in Your First Grade Child's Life' helps parents see what is going on in the classroom."*

Increased collegiality: Another teacher outcome that was reported by many of the projects (12) was that teachers are working and sharing with each other in ways that they had not seen before. Teachers are:

- Working in pairs with a stronger and a less experienced partner
- Working in each other's classrooms
- Sharing materials that they have prepared which are much more professional and presentable

One project leader summed up this outcome by saying:

> *"100% of our teachers know how to get the help they need to accomplish a task."*

C. Impact on the school program and overall functioning of the school

Schools reported the substantial impact of the program including:

- New emphasis on technology
- Increased access to computers for students and teachers
- Reorganization of the school day/schedule to accommodate interdepartmental cooperation and longer blocks of time for students to use the new technology

D. Greatest advantage for the school:

Advantages cited by the project contact people included:

- Increased parent and community support

> *"This community equates technology with good education. They think 'now my kids are getting what kids are getting on the other side of town.' . . . . Parents are reporting that increased use of computers in school is spilling over into more interest in using home computers. . . . The project has brought us community acceptance."*

- •Expanded curriculum due to integration of technology
- •New spirit of professional collaboration

> *"We have brought together the math and science departments. . . . Teachers are coordinating their curriculum, planning topics and sequence together.. . . Technology has tied the two together"*

Other comments that revealed how schools viewed the advantages derived from their projects were:

> *"Phenomenal! In one year, we put together something created by the staff that was based upon a real need. We feel a great sense of accomplishment. . . . Everything has been tied together. Obtaining this grant stimulated other fund raising efforts, our school formed a grant writing committee that is seeking out additional resources.. . .The grant allowed us to jump in and get started. . . . This project turned on the light to technology as a way to enhance the curriculum for both the teachers and the principal.. . . it would have taken us years to acquire all that equipment."*

IV. Conclusions

A. Surprises or unanticipated findings:

Project leaders were surprised by the enthusiasm and achievement of their teachers and students.

Level of acceptance and enthusiasm exceeded expectations: In spite of the unattained goals written into their proposals, school staff members were still surprised and pleased with the results:

- •Teacher acceptance exceeded expectations

> *"We were shocked that so many teachers would get excited. . . . .Last year there was fear and reluctance, so I am surprised that there has been so much acceptance.. . . I am overwhelmed by the progress that has been made.. . . Teachers are now writing proposals to seek more grants for equipment."*

- •Overwhelming acceptance by kids and parents

Pleased with the level of technical competence and gains in subject areas: Project leaders were impressed with what had been achieved:

We didn't think it would be useful for ESL students. . . . . They had a lot of success and used references that we didn't expect they could use. . . .I was surprised by the interest in on-line services. . . . .Teachers found unexpected ways to use technology. . . . We used the video network in ways we hadn't anticipated. . . . We were amazed how readily students became proficient with equipment, especially the video camera.Our students 'jumped ahead by leaps and bounds.'. . . . We were shocked that lower primary could produce what they did using technology. . . . .Kids would much rather use CDROM than traditional methods of research. . . .

The project has helped to cross cultural boundaries and bridge the division between regular education and bilingual education. . . . .First grade Spanish speaking students were able to use technology creatively and with ease. . . . The CAD systems at our middle school has had fantastic results."

Some unpleasant surprises: However, some of the surprises were unpleasant as well, most notably:

- Projects progressed more slowly and were more difficult than anticipated
- More staff development was needed because of teacher resistance
- More equipment and peripherals were needed

B. Factors that especially supported the project:

The following were listed as supporting factors:

- School administrators
- District office personnel
- Teachers
- Vendors that helped trouble shoot
- CTP support and encouragement
- Time was right "an event ready to happen"
- Accessibility of equipment
- PTA and parent support
- Community/ business support
- A SIP committee that values technology
- Support from Cal Tech
- Release time and stipends for staff development
- Research base for the program
- A staff member with the technical and writing skills who has greatly aided the project

C. Factors that impeded your project:

Projects also encountered a number of hurdles during the course of the year.

Equipment delays and difficulties: The most frequently mentioned problem were the delays that projects experienced in obtaining their equipment which was reported by more than half of the projects. The change in the Apple Computer Company product lines created havoc for some projects who had to rethink their entire equipment plans and budgets. Project leaders also experienced technical difficulties that they had not anticipated.

Lack of time: As with many interventions and new projects, school staff struggled to add this effort to their already burdensome loads. Fifty percent of the project contact people reported this problem, describing it as "overwhelming" and stating that "so many other areas need attention."

Staff Resistance: Although many projects stated that teacher acceptance and progress were the factors that strengthened their projects, this was not universally the case

- Teachers were positive during the planning but resistant during implementation
- Teachers were reluctant to leave their classrooms for staff development
- It was difficult to change teacher attitudes

Other impediments as varied as the projects themselves: Project leaders also reported on an assortment of problems that were specific to their projects:

- Difficulty with the district office was sometime reported
- Increased security was required
- Maintenance and installation has taken longer and been more complex
- Library staff didn't want equipment set up in the library
- Insufficient software in history-social science
- Insufficient funds were available
- The main leader for the project developed health problems and was out of school for the first three months
- New lab is in an non-airconditioned room which is very uncomfortable
- Physical layout of school and classrooms were not conducive to educational technology use
- No one on staff who was knowledgeable about technology

D. What projects would do differently next time:

Many project leaders stated that they had tried to accomplish too much too quickly. (10) They would be more conservative in their planning and establish timelines which were more realistic. Additionally, they would:

> *"Concentrate on teachers who are full of enthusiasm and give them the support they need. . . . .Try to involve more reluctant staff members early on.. . . Some felt a little left behind. . . . Have more staff development. . . Buy more computers."*

E. Additional comments or recommendations:

Projects take time: Project leaders advised others to allow ample time to accomplish their goals. Many stated that they had underestimated how long each stage would take. They said:

> *"Tell others it takes time, requires patience and understanding to learn and take risks, and master new equipment while we are teaching.. . . . teachers need time to learn and understand before they can apply.". . . .It takes time to bring people along, to get the kind of collegiality that we wanted. . . . .We wouldn't have deliberately taken so much time, but now I'm glad we did.. . . . We now have so much buy-in.. . . The staff has traded release time for more equipment and are being trained on their own time.. . .Taking our time has yielded a much more cohesive effort."Try to be as realistic as possible. Maybe train the people who are most interested rather than train everyone. Instead of trying to bring everyone along at the same pace have in-depth training for a few rather than exposure for all. . . . .Projects evolve."*

Next year projects will be fully underway: Some project leaders predict that next year their projects will be fully underway. They anticipated benefits and positive outcomes in the future, now that their projects are initiated. It seemed to have taken so much longer to get started than they expected, as well as longer to accomplish every step along the way.

> *"Now that everything is in place, next year will be the most fruitful year.. . . Thought it would happen much quicker.. . . It really should be a two-year project.. . . . Our timeline was too ambitious."*

Multimedia results: Projects that featured multimedia as a main component produced impressive results with both students and teachers. Project contact people discovered that teachers who had been intimidated or unwilling to get started with computers alone were much more drawn to multimedia. They were surprised that a medium that seems more technologically complex could actually be more attractive to novices.

> *"Multimedia is a much stronger vehicle for technology than the computer alone. . . . Laserdisc technology is even appropriate for younger kids!"Ten years ago, our teachers were given laserdisc technology, but this project helped to spread its use beyond a few courses. . . . . CD/ROM is an effective, economical way to get lots of current information."*

Final remarks: Finally, project leaders made comments during the interviews which shed additional light on the project results:

> *"Other schools in our district are interested and have come to look; we are able to give them guidance on what works. . . . Adult Ed classes are using our equipment at night. . . . Sure helps when you have someone on staff with the knowledge and motivation in technology. . . . .Having a knowledgeable teacher who understands the technological complexity of the project was essential to its success.. . . This is not a project that would or could have been envisioned or implemented without such a person. . . . The grant gave us a head start. . . . For a small school to be offered a chance, the opportunity to do something like this is wonderful. . . . .Many high schools have a computer lab in the business department.. . . . This equipment is not accessible to students or teachers.. . . . It is seen as a separate subject and is not integrated.. . . . The AB 1470 School-Based grants broke computers out and integrated them into the curriculum."*

F. Project Profiles for the 30 projects participating in the assessment interviews

A rapidly expanding new high school in San Diego County, currently serving 2,000 students, based its project in the media center in order to have an impact on the maximum number of students. The grant enabled the school to establish a Computer Research Center with eleven workstations that provide access to on-line databases and CD-ROM reference applications. The Center is open to all staff and students with a primary focus on developing students' research skills across all areas of the curriculum. The project will ultimately network computers in the classrooms and teachers' offices with the Center.

A two-room school in a rural northern county established a school-wide publishing center that provides all students with an opportunity to write, edit, and publish. Software that integrates graphics with the written text was purchased to stimulate creative writing, and a video tape library of ITV reading and writing programs was developed. Because of the relative isolation of the community, students and staff had little previous experience with computers and other resources. The project enabled them to increase both their awareness and access to educational technology. The project is an adaptation of the MTS Level II Project Links.

The MTS Level II History-Social Science project, Project HAT, was the model for the project in a rural school serving 480 students. The history/social studies project enabled 150 students in grades 6-8 to plan and produce multimedia history projects using a CD-ROM encyclopedia, interactive laserdiscs, and ITV materials and videos. Language arts was integrated with history as students organized and completed their work in the computer lab. Library resources were augmented with the addition of these non-print materials, bringing about increased use by both teachers and students.

A middle school in east Los Angeles County decided on a multimedia approach for their language arts/social studies program. The subjects were combined in a two-period core with the interdisciplinary teams using new computer systems and software to provide instruction in writing, reading, and research through a humanities approach. The equipment is housed in the library complex which now offers on-line services for student research projects.

Since technology resources were extremely limited in an older high school located in the central valley, project planners decided to concentrate their efforts on changing their library into a multimedia resource center that would serve the maximum number of students and staff. An electronic resource room was established with user-friendly student workstations for research, word processing, problem solving, and project development. A demonstration computer workstation was made available to teachers to encourage their use of technology. The library media center also centralized the management of new learning resources , such as camcorders and LCD projector-presenters for "fair-use" circulation. The accessibility of the equipment was combined with staff development to increase understanding and use of educational technology.

A middle school in Los Angeles County modeled its project on MTS TASCII which focuses on science. The school serves over 900 students with a 90 percent minority population. The science department used interactive videodiscs, computers, and camcorders to enhance instruction. At the same time, staff development stressed student collaboration and active learning strategies with the teacher acting as the facilitator. The project combined the infusion of new equipment and materials, modified teaching strategies, and revised the science curriculum to be more balanced and sequential.

For the 784 K-3 students in a central valley school, the grant was seen as an opportunity to use educational technology to augment the school plan goals of equal access to language and literature. Adapting the MTS Project Links, the first steps were to set up a similar video network, put more computer resources in classrooms, and provide staff training in the use of these technologies. The project integrates reading, writing, speaking, and listening through the use of audio and visual presentations, word processing and desktop publishing, and ITV productions of literary works. Through the use of their new video network, they were able to broadcast the school's spelling bee to all classrooms.

A K-3 elementary school in Southern California identified the need for additional strategies to improve the oral and written language skills of its large limited English proficient population. With the grant funds, they were able to purchase computers, printers, and speech synthesizer software which allowed them to integrate technology into language arts instruction. Computers with speech capability were used in both Spanish bilingual and English classes to expand vocabulary and strengthen listening skills, and limited English students used talking ESL programs to enrich their knowledge of English. Students were introduced to simple word processing and encouraged to write in their primary language.

At an elementary magnet school in San Bernadino County, improving math problem solving skills was the goal of the project.The grant allowed the school to purchase hardware and corresponding software designed to present math problem solving activities that are used in the classrooms and in the computer lab. Project activities include the use of Regional Educational Technology Advisory Council math lessons, whole group instruction using a large screen monitor, and cooperative learning at the computer practicing problem solving.

Teachers at a San Francisco Bay Area elementary school determined that upper grade students needed motivational materials in social studies. They decided to improve social studies instruction through the use of interactive videodiscs and computer simulations with the goal of developing a more dynamic, flexible, and powerful curriculum through the infusion of technology. Fourth and fifth grade students worked in groups to develop and then video tape reports using the overdub capabilities of the VCR to add narration. The project is an adaptation of the MTS Level II project.

School Site Visitation Findings

I. Background Information

Site visits were conducted to find observable evidence to corroborate the findings from the surveys, self-assessments, and interviews. Visits were focused on those schools that adopted Level II MTS Projects to help determine the influence and benefit of these models on facilitating implementation of School-Based Educational Technology Projects. The visits generally observable evidence that the projects were having the effects suggested from the other data sources from both the School-Based Grant recipients and the reports of the Level II MTS Directors. For more information on Level II MTS Projects mentioned in this section see Phase II, Volume III of this study.

About the Visits: During May and June, 1991, eleven schools that had been awarded Phase I MTS school-based grants were visited by the CETAP project consultant. One full day was spent at each school, interviewing the project coordinator, teachers, students, the site administrator(s), and others as deemed appropriate and important for each site (e.g., parents, district administrator, aides, etc.). Identified classrooms and/or labs were observed where technology was being used that demonstrated the objectives of the project well.

About the Schools: Schools were selected for site visits based on recommendations from Level II MTS project directors. In each instance, the schools were thought to be faithful adopters of the Level II MTS project. This was determined by several characteristics, including visitations to the Level II project, workshops requested by the school from Level II MTS project staff, and phone interviews by the CETAP project consultant prior to the visit. Below is a listing of each of the schools, categorized according to the Level II MTS school project it adopted.

PROJECT LINKS: LANGUAGE ARTS

Landau Elementary School: Located in Palm Desert, this K-5 school serves 858 students. The project's focus is integration of technology into the language arts curriculum with an emphasis on writing. A networked lab has been set up in a classroom with 26 computers. Teachers bring students into the lab once a week for at least forty minutes, according to a preassigned schedule. The assistant principal oversees the lab and an aide is assigned to work with teachers during their time in the lab.

Roy Cloud Elementary School: Located in Redwood City, this K-6 school serves 392 students. The project's focus is integration of technology into the language arts curriculum with an emphasis on writing. A lab has been set up in a classroom space and students are brought into the lab by their teacher. Parent volunteers assist in the lab; teachers are responsible for instruction while their students are in the lab.

PROJECT FUTURE: LANGUAGE ARTS

Orchard Elementary School: Located in San Jose, this K-6 school serves 392 students. The project's focus is the integration of technology into the language arts curriculum with emphasis on writing, reading, listening, and speaking. A lab has been set up in the library, along with a media supply area so teachers may use equipment in their classrooms. A media director is responsible for assisting teachers with resources in their classrooms. Teachers are responsible for student instruction while using the computer lab.

Ball Junior High School: Located in Anaheim, this 7-8 school serves 923 students. The project's focus is the integration of technology into the language arts curriculum with an emphasis on writing. A Mac lab has been set up in a classroom space, and English teachers take their students into the lab according to times signed up for on a weekly chart.

PROJECT HAT: HISTORY-SOCIAL SCIENCE

Bayside Middle School: Located in San Mateo, this 6-8 school serves 634 students . The project's focus is the integration of technology into the social studies and language arts curricula with an emphasis on the social sciences. A media center has been set up next to the Macintosh Lab (established at an earlier time with other monies) and library. Social science teachers have access to all three on an as-desired basis.

PROJECT TIME: HISTORY-SOCIAL SCIENCE

Oak Park High School: Located in Agoura, this 9-12 school serves 280 students. The project's focus is the integration of technology into the social science (geography) curriculum, with an emphasis on writing. A computer lab has been set up next to the library and ninth grade geography students and tenth grade English students rotate into the lab on alternating days, two days each (no students are assigned to the lab on Fridays). The project director is assigned to the lab full-time. Teachers send half their students to the lab to work with the director; the other half remain with the teacher for smaller class size instruction.

PROJECT TOPS: SCIENCE

Montevideo Elementary School: Located in San Ramon, this K-6 school serves 533 students. The project's focus is the integration of technology into the science curriculum through the use of a wide variety of hardware and supporting programs. Materials are housed in the library and/or classrooms, and are accessible to all teachers in the school. Teachers use technology in their classrooms to enhance and augment their science lessons.

Buri-Buri Elementary School: Located in South San Francisco, this K-6 school serves 583 students. The project's focus is the integration of technology into the science curriculum through the use of a wide variety of hardware and supporting programs. Materials are housed in a classroom space and are accessible to all teachers in the school. Teachers use technology in their classrooms to enhance and augment their science lessons.

PROJECT TASC II: SCIENCE

Pioneer Middle School: Located in Upland, this 7-8 school serves 860 students. The project's focus is the integration of technology into the science curriculum through the use of a wide variety of hardware and supporting programs. One science teacher volunteered to be the "pilot" teacher during the 1990-91 school year and used the equipment in his classroom with his regularly assigned science students.

Gage Middle School: Located in Riverside, this 7-8 school serves 1,154 students. The project's focus is the integration of technology into the science curriculum through the use of a wide variety of hardware and supporting programs. Equipment and materials are accessible from a lab and teachers either take students to the lab or resources to their classroom.

OTHER: LANGUAGE ARTS

Sequoia High School: Located in Redwood City, this 9-12 school serves 1,600 students. The project's focus is the integration of technology into the senior English classes with an emphasis on writing. A

Macintosh "Communication Lab" has been set up in a classroom space near the English Department, and teachers may take students into the lab as desired and signed up for.

Synopsis: The predominant curricular focus of the site-visit-projects was language arts with emphasis on writing. Most of the site-visit projects determined that a lab setting was the most effective and efficient means of integrating technology; in most lab settings, the teachers either bring or send their students for instruction. Most of the labs are arranged around computers and computer applications.

Following is a summary of the findings across the sites visited with selected quotes from teachers interviewed at the sites.

II: Planning

In all instances, site-visit projects had either visited one or more Level II MTS project sites or had been in-serviced by the Level II MTS project staff. In many instances, both activities had occurred.

> *"We did a summer institute and went to the Level II school for two days. Everyone went, on different days so the entire school wasn't vacated all at once. On the day I went, everyone was very excited about the program, even those that were technologically resistant."*
>
> *"I was one of eight or nine people on the team; we wrote the grant by meeting at the principal's house on weekends and hammering it out. We knew that we had language arts as a target, so the decisions regarding what to do were simple. Several of the teachers and the principal visited many schools to look at as models. We used their model."*

Site-visit projects directors indicated these initial visits prompted their planning for project development and had they not had the experience, they might not have been as attentive to the need for planning. They particularly stressed the importance of having been guided by Level II MTS staff to include *lots* of staff development opportunities.

> *"Training is critical. We have to allow for it. We need more than a few in-services. We need a lot. We need to build in the training."*

Site-visit projects schools that established a committee structure for planning, found it to be valuable for project implementation, although the few schools that did not use a committee reported they were able to implement their project without any major problems (other than those 'normally' encountered by introducing a new project into a school).

In many instances, project planning was included as part of the school's SIP activities. In one school, the project was completely absorbed, even to the co-mingling of funds.

> *"Most of our planning is done through our SIP committee. In fact, our grant monies went directly into the SIP budget, which makes it very hard for me to do the bookkeeping."*

All site-visit project directors indicated they had a formal plan to follow during implementation, and acknowledged that the planning required to apply for the grant was very beneficial. Most made modifications, however, to their original plans, generally because of time factors. Frequently delivery schedules were delayed, or staff expressed a need for additional staff development to ready for implementation.

III. Content

The majority of the site-visit projects chose to integrate technology into the language arts curriculum to specifically improve communication skills, particularly writing. Even in schools where other content areas were emphasized, improving students' writing skills was a strong focus. Because most projects had used funding to establish a computer lab, this was not an unusual finding. In one school, writing had become the primary focus for development even though stated project objectives did not include writing as a goal or activity.

A wide diversity of other technology was also used by site-visit projects. Other than computers, the following technologies were frequently used: laser disk players, LCDs, VCRs, camcorders, cameras, and GTV. This was particularly seen in sites where Level II MTS science projects had been adopted. Project directors attributed the wide range of equipment and resources to the two models they had observed.

> *"We had an in-servicing from the Level II project right after we found out we were being funded. When we saw all the equipment and all the possibilities, we knew we wanted it! Our teachers were sold with this first in-service."*

IV: Project Implementation

Most site-visit projects were unable to begin their project activities as originally scheduled, primarily due to time constraints. In some instances, equipment did not arrive on time; in others, retrofitting of the classroom(s) was delayed. Several other reasons were mentioned as well.

> *"We seemed to have nothing but troubles. The carpenter making our furniture died and we had to find a new one. Then we had problems with the electrical in the lab classroom that had to be fixed. And to top it all off, the company was slow delivering our order. In fact, they changed our order and we had to get it all straightened out."*

At almost all project sites, a classroom teacher was responsible for implementation of the project, at the same time being required to teach either a full or part-time schedule of classes. In two schools, administrators were responsible for the projects, and in one school an outside consultant (a former media specialist at the school) was responsible.

The schools that modeled their learning resource management after the Level II science projects had more to deal with in terms of logistical flow and scheduling as they arranged to take equipment out to the various classrooms for teachers' use.

> *"I see myself as a facilitator of materials," indicated one of the teachers. "I have to know where they are and how to get the best resources out for the job to be done. If the teachers don't use it, how are the students going to get it? Do you want them to be the fence or the road. If the program stays in the file cabinet, no one will get the benefit."*

Unlike projects where learning resources were housed in a lab setting, these directors had to be particularly efficient in making sure that requested equipment arrived as scheduled.

> *"We have such great support from staff here. I know that if I'm not around, the media specialist or the aide will get whatever is needed by teachers out to them. I can't stress how important this is. If equipment becomes a hassle for teachers, the tendency is not to use it. I don't want this to happen."*

Staff development was stressed in every site-visit project school as being one of the most valuable assets of the project.

> *"I really liked that the state required that a certain amount of the grant be devoted to staff development. Of all, this is what the teachers appreciate the most. Just having the time was great for them. And of course, we were out of alignment anyway, so it was perfect for us. It also motivated the district, way out of alignment, to get on track. I would have liked to see more framework alignment using technology.*

Schools implemented varying degrees of staff development, primarily based on the needs of the staff and overall objectives. In some project schools, training was done on a regular basis at faculty meetings. In others it was done during release days. In one instance, time was provided for small groups of teachers to come to the resource lab for individualized training as various programs and/or equipment comes into the school. In some instances, time was provided for teachers to come to preview resources they may decide to order.

> *"It's been great to be able to take time and see what is available and to learn how to use it, see if it will work for us, and feel comfortable about it," commented one of the directors. "When we order something, we know before it arrives that it is what we want. Our Level II school has been great about letting us use some of their things for just this purpose."*

Few of the projects had implemented any evaluation procedures, primarily because their projects had recently been installed. Although all project directors expressed that evaluation was valuable, some were reticent about their abilities to adequately develop the forms necessary to gather the data needed. One project director, however, had no qualms whatsoever about his abilities to evaluate the project, and was, in fact, well into the process.

> *"I made up a student and a teacher survey myself, since we weren't getting any assistance in this. The staff survey is adapted from the Level II model. We also keep a technology use log book, a technology tutor request form, and lab schedules. All of this we have used to evaluate what has been happening. We wanted to capture more qualitative data, but that hasn't happened yet. We've also done evaluations on the workshops. They have been very positive. We've also done informal evaluations of software. We look to see what works for our needs and we know when it's right. It will be interesting to get the final surveys back and compare them with the first ones."*

V. Project Support Resources

Level I and II MTS Projects: All site-visit project schools indicated they had received services and support from Level II MTS projects. Only one school received services from a Level I MTS project. Most site-visit project directors and some teachers had attended at least one CUE conference, and several had attended more, where presentations observed were found valuable.

CTP: Six of the site-visit project directors indicated they had found CTP services to be valuable, specifically the evaluation workshops.

> *"One of the teachers and I went to the CTP when they did the evaluation component. It really gave us a chance to sit back and take a look at what we had done, to reflect. I remember how surprised we were at what we had done. We hadn't really had a chance to do this before, and the most valuable thing was to see how far we've come."*

District Support: In the schools that indicated they had strong district support, project directors attributed much of the project's success to that support.

> *"The district has been very helpful in setting us up. There have been no delays or slowdowns. They've given us lots of in-kind support. They've also covered the cost of phone lines, some of our publication expenses, and a lot of others. It has been extremely helpful and has enabled us to concentrate on our project."*

> *"We have a district person who does staff development. She gives in-services in technology, in programs; she knows it all. She knows which are the best ones. Our district, and our school, has the best resource in her. She makes all the difference in our project. She helped us write the grant too. We've had nothing but positive support from her."*

One project director indicated that much support was received from the language arts department chair, stating:

> *"She softly guided the department forward. She does outstanding things with kids and is committed to the use of technology. She likes our department to be out in front. She was strongly in favor of the grant application and had us bring our computers into her room several times to do writing activities. There were a lot of logistics that needed to be worked out, but we were all willing to go for it."*

VI: Funding Support

Sources: Five site-visit project schools were prior recipients of AB 803 funding, which was reported as one of the main reasons for current interest in technology and its applications to curriculum. Six schools received additional support from SIP funds on an ongoing basis, and four indicated they used lottery funds to augment their AB 1470 monies. Only one school reported they were using Chapter I monies in conjunction with funding from the grant.

One school had a long history of garnering funds for technology projects, starting with AB 803 (which got the first computer lab started), then receiving the English Demonstration Grant (which emphasized staff development, thus setting the stage for AB 1470 objectives), then recently a foundation grant (which will place 15 IBM's on every campus in the district). This school will also be networked to an 'at-risk' program in the local mall.

> *"This past year has really been a big turn-on to technology across our campus."*

Project directors consistently acknowledged the tremendous impact the grant monies have had on what projects have been able to achieve.

"There's no way we could have done this without the seed money!" commented one of the teachers. Another added, "Without the grant, we wouldn't have even started. With the seed, things blossom. Without it, nothing grows."

Anticipated Future Funding: Without exception, directors, teachers, and administrators at all eleven schools indicated they are anticipating additional funding to enhance what has been so successfully started. Most aren't sure where they will get the funding, but are certain that it has to be obtained. All expressed dissatisfaction that the School-Based Grants were funded for only one year.

"One year's funding," commented one director, "is just enough to warm up with. You just get underway and then your money is gone." Another director echoed similar sentiments, saying, "We need another year of funding. One year is not enough. The first year is exploration, the second year is growth. You get to really see the additional things you need that first year, then you need to continue so you can really have an impact."

VII. Supporting and Impeding Factors

Supporting Factors: Numerous supportive factors were mentioned by both project directors and by teachers. Repetitively, they expressed the value of outside help, including the Level II MTS project staff, county and state staff, CTP staff, and district administrative staff. In almost every instance, recognition of the outside support was followed with an expression of need for continued assistance.

Both directors and staff members reported staff development to be a strong supporting factor, and generally they would like to see additional opportunities created to further increase teachers' knowledge and abilities.

One project director stated that the opportunity to become an adopter was a tremendous support, "I like the idea of the adoption/adaptation. When I first went to the meetings, I was reluctant. My principal really pushed me to go. When I heard about the social studies part, I was interested because I have an interest in social studies. It was nice to know you could 'adapt' an idea to your own school."

Impeding Factors: The two greatest impediments to project success that were repeated across all eleven schools were insufficient time and resources. Time was a significant impediment in two areas: the director was generally a teacher and was required to teach a full or reduced load of classes each day; equipment and programs were almost always delayed and late in arrival. Not having someone assigned to the lab to assist teachers was also frequently mentioned as an impediment.

"It is a real sore point," commented a teacher. "We have our equipment finally, we have our room, but we don't have a lab person. The district signed off on the grant and it seems their philosophical, moral commitment stopped. We can't send all our teachers out to see what's happening to learn from. We need a resource person. We need someone who can do this for me so I can teach my classes."

Two school directors indicated that recalcitrant and reluctant teachers were an impediment to a project's success, primarily because of the difficulty and time commitment required for training.

> *"The biggest problem," stated one director, "is the reluctant teacher. With the students it's easy. They're so willing to try new things, to take technology on. The hard part is with the teachers. So many of them are just resistant to trying something new and different."*

Several directors reported that circumstances 'beyond control' were also an impediment, including retrofitting problems, a change in administrators, a change in assignment for project teachers (removing them from participation and assistance), and unfamiliarity with a lab teaching situation.

"One problem is that English teachers are not used to teaching in a lab situation; science teachers are," commented one of the English teachers. "We're used to teaching right to the last minute, and this has certainly created some problems."

VIII: Project Outcomes

Student Outcomes: Student outcomes were reported by project directors, teachers, administrators, and students themselves. In almost every instance, the respondents dealt the outcomes to be highly positive. Positive outcomes were reported primarily in four areas: learning, motivation, attitude, and behavior.

Learning: Project directors and teachers frequently expressed that they had noticed a change in students' learning and/or achievement in classes. For example, several teachers talked about how students' writing had improved, in length, quality and depth:

> *"Students are actively engaged in writing. I can't believe it they're writing a lot more than they used to. . .I haven't seen that students much prefer to write to using the computer. They can't wait to finish one project and start the next. they are so eager. I know, myself, that I prefer it. I'd never go back to writing longhand. Student's work tends to be messy; this way they can clean it up and make it presentable. . . The biggest advantage for students is that they can do their reports easier. They can type easier than using a pencil, it's quicker, and it looks better!. . .I think for students it will be impossible to survive without access to a computer, or better yet, one at home, by the time they reach high school. What I find happening with my students is that they turn most of their work in done on a computer. The students are really striving for quality. Computers allow them to achieve quality. Well over half of the papers I get have been done on computers. Many have graphic covers done on Printshop. A lot a very sophisticated."*

Several teachers also reported that increased learning had occurred with ESL students.

> *"I've had great success with my ESL students. They're interested, and they want to do well. They really do learn the language faster, I think, than when I taught without technology."*

Another told a story about a Vietnamese student who began participating through "Book Talks," a classroom instruction technique where students report to the class on a book they have read while being videotaped. The videotapes are then played back, and students can provide input for improvement.

> *"The first time he reported, he didn't say a thing. Then he got up the second time and said the name of his book, his name, and told us who the author was. By the fourth time, he was really telling us a lot of information about the book. His growth in language was amazing. He's really been interested in using the camera, and loves to get up front of it."*

Another teacher expressed how technology had benefitted resource students:

> *"I think the impact, especially on special students, has been the best. It has really decreased their frustration levels, which allows them to feel good about their progress, which in turn allows them to learn more, faster."*

Students agreed that technology increased their learning abilities:

> *"You really learn a lot. You learn facts much easier. . It makes our reports so much better. You get to use pictures and other things. It's far more interesting than just going and reading a book. We're not just getting ready for the future, we're learning a lot of stuff, a lot of other stuff, along the way."*

According to one of the principals, increased learning has been the greatest advantage to students implementing the technology in their school.

> *"I've seen a great increase in students' thinking skills as a result of technology being in this school. For example, using CAP writing modes, students have put on hats and adopted the persona of that person, and have talked about that person, then written about it. Also, the Reading Rainbow in Book Talks, some of the students have talked on and on, and these students are ones that normally wouldn't say anything. Also, the critiques that some teachers do, they have been tremendous for thinking skills. Students view their presentations, then critique it, and outline what they can do to improve. Students are excited, turned on, and love to work as a result."*

Motivation: Repeatedly, both teachers and students reported that interest in schoolwork and in school had increased as a result of using technology.

> *"Students' motivation and awareness have increased. They are delighted to be allowed to create with the equipment on their own. They enjoy being in class more, they enjoy being in school more. As we get more training, we can pass more on to our students."*

Attitudes: When a fourth grade class was asked how they reacted to using technology, their response was unanimous: 'It's fun.' Their response sums up the change in student attitude noticed by teachers and administrators across the school sites visited. For the most part, all constituents agreed that because technology had been introduced into the school and was being used on a regular basis, student attitudes had improved towards learning, towards school in general, and towards completing their work. And many expressed how technology was preparing them for the future.

> *"It will help us along with a lot of things. I'll be able to do my bills with it, my budget, etc. Right now I do my homework using it. . . Technology is much easier. It's not boring. It's getting us ready for the future. Our world is using technology; we even have computerized cars."*

Several talked about how roles had shifted as a result of technology use. Students were proud they were able to act as teachers, and teachers, though uncomfortable at first, were pleased to watch students assume leadership roles.

Self -Confidence: Overall, both teachers and students indicated that student self-confidence had increased tremendously as a result of using technology.

> *"It was a real surprise to us to discover that students learned faster than the teachers. They have tremendous self-esteem as a result of the technology. It wasn't part of the grant. It wasn't part of the things we expected to happen. . .It has given students an added degree of expertise, increased self-confidence, and a camaraderie that didn't exist before. . .My parents have had a camcorder at home for a while. My mom wouldn't let me use it. Then I got in the video club at school and my mom said, 'If the school can trust you, then I can.'"*

Comments from students such as "It's been a good experience for me; its given me a lot of self-confidence," or "It has given me an added degree of expertise, increased self-confidence," were no unusual, but instead frequent statements during interviews.

Overall: Most teachers reported the greatest student change observed had to do with writing. Many talked, as above, about the positive impacts they had witnessed: students wrote more, they wrote better and they wrote more neatly. Several teachers also talked about the future impact of technology on the writing process, and on the process of communication in general.

Respondents cited additional student benefits, including the following: increased peer interaction, hightened positive attitude towards school and classroom, added expertise in particular areas increased self-confidence, greater excitement about projects, and camaraderie between teachers and students.

Teacher Outcomes: Numerous teacher outcomes were reported by project directors, teachers themselves, administrators, and students. In practically every instance, the respondents stated the outcomes to be highly positive. Positive outcomes were reported primarily in three areas: motivation, skill development, and collegiality.

Skill Development: Teachers were reported to have dramatically increased their skills, in many areas. Of particular importance was their inclusion of the state frameworks into their curriculum. Many teachers indicated that until they began using technology they had only paid lip-service to the frameworks, recognizing that they existed, but not really using them as part of their lesson planning. As one of the English department chairs nicely summarized:

> *"The advantages in using technology for our teachers have been tremendous from my perspective. Our technology lab has really reinforced the frameworks with our curriculum. Yes we all had sessions where we talked about how we could use the frameworks in our lessons, but this really cemented it for us. The lab has brought us together on the issue, teachers feel connected to it. I go out now, and I see that teachers are really using the frameworks as the guiding principal for what's happening in their classrooms."*

Many indicated the advantages to instruction to be tremendous as well, particularly as technology has allowed teachers to move from an approach where the teacher is in control of information to one where the student has greater responsibility for information acquisition. As one principal commented:

> *"Teachers are learning about something new, they are approaching instruction a bit differently, and they are excited to see their students so excited. Teachers are allowing students to direct many more of their tasks than they have ever done before. They let the students design projects, for example, and determine the resources they will need to consult in order to deliver the finished product. And the teacher is facilitating the students by acting as director, pointing them in directions for exploration."*

Another principal talked about how teachers in her school had been using the video club services, taping lessons so they could be used with students who were absent:

> *"Technology has really added a skill for teachers that they wouldn't have had the access to before; they can now use services in optional ways to aid their students. The video club has been a great asset to the staff in their thinking."*

Motivation: Teachers talked repeatedly about how their interest in teaching had increased as a result of learning various new teaching skills using technology. One frequent word that surfaced as respondents talked about using technology was "fun." Teachers stated that technology had increased the fun in their work. They also reported it had added challenges and tremendous growth in professional competence. Principals talked about teachers wanting to learn everything available, then asking for more beyond that. Teachers talked about how they were "stimulated" about their jobs again, and students talked about how much more "fun" teachers had become. One of the principals stated it best when he said:

> *"All I have to do is walk around the campus and I can see that we've been successful. The teachers are using the equipment and they're using it with the students. They come in to see me regularly to see what they can take on next. They're excited about doing more. They're asking me all the time about buying more and better equipment, so they can do even more."*

Collegiality: One of the greatest assets of the projects lauded at almost every site was the increased communication and collegiality which technology brought to teachers. Again and again, this refrain was iterated, summarized best by one of the teachers:

> *"Technology has forced us to work cooperatively. You've heard about cooperative learning for students? Well, we've had to learn how to work together. We learn from each other. We share a lot. One or two of us will go visit someplace, then come back and share it all with the rest of the staff. We see each of us doing different things with technology, and we train one another. We talk about what we're doing."*

And as another teacher at another site added:

> *"I was so excited when I was here the other day, to hear teachers in other departments than mine talking about technology. They're interested, they're sharing, they're willing to take it on. They eager, in fact, to share their ups and downs as they learn new things. They're willing to help one another and to work together to achieve a particular goal."*

Program Outcomes: Most respondents cited alignment with the curriculum frameworks as the major program achievement as a result of technology use. Since this was one of the grant requirements, they reported it really pushed them to address this issue in a realistic, productive way. They also indicated that integrating technology as a result of the Site-Based Grants had increased their focus on coordination of subject matter areas, technology, and state requirements. As one principal described:

> *"It has brought a focus that enables teachers to carry on an integrated program coupled with technology and the state frameworks. It really brought it all together."*

Several sites talked about the increased interest level for staff, students, and parents as a result of technology. For example, one principal commented:

> *"The greatest impact on our school has been the exposure to newer technologies that we wouldn't have gotten otherwise, such as CD-ROM. It motivated and interested teachers and staff to use technology in other subject areas and curriculum. It wasn't the romance of the hardware or the software; it was the exposure to what it can do in the classroom. It really heightened the interest level, overall, of our staff."*

And a principal at another site talked about how technology has improved the presentations and programs offered to parents, such as back-to-school night.

> *"We had several nights where we set up multi-media presentations. Particularly on our back-to-school night, we were really prepared, setting up laserdisc players, videos, camcorders, etc. We showed parents the equipment, then encouraged them to visit their child's classroom to see what the students were doing with it. We also used a lot of students to demonstrate the use of technology in the classrooms, which was very impressive. Parents were so excited! This has been a real boon to our program in so many ways."*

Summary and Recommendations

At present, approximately 600 school-based educational technology projects have been awarded to about 10 % of the schools in California. A third year of these grants will soon be competitively awarded to fund an additional 250 projects. The demand for this program is very high as evidenced by the 1,700 applicants for the first two years and approximately 1,100 applicants for the third year with 30 percent of the applicants receiving grants each year. Approximately 5.1% of the schools in California received School-Based Educational Technology Grants during 1989-90, 4.5% during 1990-91, and 4.0% during 1991-92 with a total of 13.6% of the schools in the state receiving grants. This study focused on the 321 grants funded during 1989 to be implemented during the 1990-91 school year.

I. Summary of Findings

The conclusions are drawn from and aggregation of the findings of the Self-Assessment Inventories, telephone interviews, teacher surveys, student surveys, and visitations to 12 sites. The findings are summarized below:

Planning

- The grant application process and guidelines greatly facilitated inclusion of technology into local instructional planning and school-site plans.
- Regional agencies such as the California Technology Project, with assistance from the CDE, provided training to facilitate development of site-based Technology Use Plans.

Content

- English-Language Arts was emphasized by over 70% of the projects.
- Most projects emphasized computers with a combination of other technologies.
- Projects tended to use application software with word processing as the major emphasis and made minimal use of content-specific educational programs.
- Close to one-third of the school-based grant recipients adopted/adapted Level II MTS projects.

Implementation and Staff Development

- Implementation of projects was generally coordinated with other school programs.
- Staff development was reported to match a broad range of staff needs.
- The staff development provided by the Level II MTS Projects was often reported as a major factor in facilitating implementation of technology to support curriculum and instruction.
- Projects developed evaluation plans which were still being implemented when this study was taking place.
- Adaptations of Level I and II models facilitated implementation and reduced re-invention of practices already developed and studied.
- Planning, learning resources management, framework utilization, staff development, coordination with school programs, and technology integration were greatly facilitated by the projects.
- Many projects set unrealistic timelines and objectives for themselves.

Support Resources

- Other than district and school staff, the CTP was the major source of assistance to School-Based Grant projects.
- The CTP and the *Self-Assessment Inventory* were the major sources of guidance for the evaluation of School-Based Grant projects.
- District office staff was the most common source of assistance; over half of the districts assigned a part-time person to assist with project implementation.

Funding Support

- AB 1470 funding was needed to initiate projects and was usually adequate, but in many cases was not extended over a long enough time-span for complete implementation.

Supporting and Impeding Factors

- School-Based projects reported that support was usually sufficient and that it was most often provided from local staff with assistance from regional agencies.
- School level implementation was often restricted by delays in equipment acquisition and lack of time to fully implement the project.
- Support from the principal, student access to technology, and staff development were critical factors in successful projects.

Cost-Benefits

- Almost all project staff reported that at least some aspects of the projects would continue with district and business partnership support after the AB 1470 funding was expended.
- Significant additional funding for project-related resources was provided by districts and a variety of other sources.
- The inclusion of technology use planning into existing school plans stimulated the use of School Improvement Program (SIP) funding for technology.

Outcomes

- The projects attained most of their intended student and staff objectives.
- There were significant increases in student academic performance and motivation reported by project staff and according to surveys of teachers and students.
- Teachers' use of technology to support the curriculum was increased.
- Teachers reported many unexpected improvements in student learning.
- Students, teachers and administrators placed a high value on the improved access to technology resources provided by these projects.
- Though dissemination was not the focus of these projects, many developed promising practices and products with potential for application at other sites.
- Projects that reported the greatest positive outcome for students and teachers tended to report the most extensive planning for technology use.
- Many teachers reported that the lowest achieving students benefited from the introduction of technology.
- The planning, development, and implementation of school based grants greatly facilitated the infusion of technology into the curriculum
- Allocation of grant resources for the first year of the program was equitable in terms of student ethnic distribution and school size and location.

II. Recommendations

Planning

- Continue the site-based planning requirement for the Technology Use Plan and encourage schools to refer to and follow their plan frequently.
- In the guidelines and in the proposal development training, provide educators with information about establishing realistic project timelines.
- Information about the regional support agencies needs to be made more available to schools.

Funding

- Continue to use the process for allocation of funding across the ten County State Steering Committee established regions.
- Projects should be funded for a two year period and should be able to reapply for continuation funding if they are willing to disseminate promising products and practices.
- Increase the level of funding for School-Based Grants Program and the support resources that clearly increased the effectiveness of the projects (e.g. CDE, CTP, ITV, and model programs).

Staff Development

- Continue to require that a portion of the budget be allocated to staff development.
- Refine the application form to elicit a more complete description of the Technology Use Plan and how it will be developed and used.
- Funding should be provided to support the recommendations made in this report.

Evaluation

- Evaluation forms should be made available to projects before implementation begins in order to guide data collection.
- Develop and disseminate new "PQR Exemplars" that depict exemplary uses of technology within the instructional program to future project developers.
- The CTP regions should play a major role in supporting evaluation activities and in collecting project-specific evaluation information required in the RFP.
- The CDE should utilize a standard form for the project evaluation (e.g. an adaptation of the self-assessment inventory).
- Applicants should be encouraged to involve the broader community, including local businesses, in planning the project.
- The CDE should provide for year to year collection, analysis, and reporting of project data and information to stakeholders.

Dissemination

- A dissemination system should be set up for the many projects that have developed promising products or practices.
- The CTP should be used to disseminate promising products and practices. TRIE, workshops, TLAs, and other CTP services could be used.
- A process with incentives should be established to identify and disseminate promising practices that emerge from the School-Based Educational Technology Grants program.

APPENDIX A

Profile of the First Phase of School-Based Educational Technology Grants Program

Prepared by John Cradler, Educational Support Systems, August 1990

Since the inception of AB 1470 in 1989 the state has funded 595 School-Based Educational Technology Projects. Recently the State Board of Education approved the distribution of approximately $5.5 million for the third cycle of School-Based Educational Technology Grants. The Office of Educational Technology and the California Technology Project are now getting ready to distribute application forms and implement the process for AB 1470 grant development training for the third cycle of School-Based Grants. The following provides a profile of the 321 grants funded during first cycle of AB 1470 School-Based Grants.

The database from which the information was derived was developed using information included in the Cover, School Profile and Budget pages of the 321 proposals funded during Cycle I. These information categories include: school demographic data, type of technology to be used, curriculum areas to be emphasized, level of support for staff development, names of programs adopted or adapted, previous technology grants received, and other useful data. Additional data from CBEDS, and the 1984-85 AB 803 Educational Technology Local Assistance Program Annual Report were also used in developing this report. The California Technology Project (CTP) Coordinators were provided with the database in disk format so that they could select and target specific funded projects in their regions for information sharing, staff development, and technical assistance.

Applicants: The California Department of Education received 1,670 grant applications. Of these, 321 were funded. Because there were 12 multi-school consortium grants, 379 schools will actually receive funding. These 379 schools make up 5.15 percent of the schools in the state (See Figure 1). The average grant size was $19,500, with a range of $2,750 to $89,850.

Figure 1: Percentage of Schools Impacted Statewide

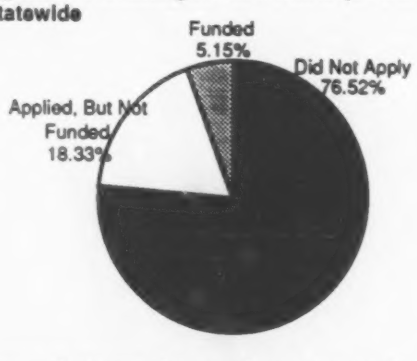


Figure 2: Grants Adopting/Adapting Level II Academic-Model Technology Programs

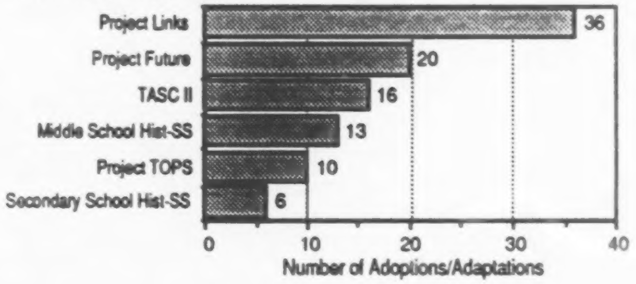


Figure 2 shows the number schools that adopted or adapted existing Level II Model Technology School Projects. A total of 90 (24%) of the grants were adoptions of existing Level II MTS projects and a few (20 schools) were adoptions or adaptations of Level I Model Technology School projects. The larger number of Level II MTS adoptions is due to the fact that while the Level II MTS projects are actively disseminating, the Level I MTS projects are just now packaging and initiating dissemination of their projects. The Level II MTS projects include: Project Links, an elementary English-language arts program; Project Future, a middle school language arts/technology project; TASC II, a middle school science project; the Middle School History-Social Science Program; Project TOPS, a K-6 science project; and the Secondary School History-Social Science Program.

Geographic Distribution of Grants: Funding allocations were equally distributed by student population across the 10 pre-established County Superintendents Regions. This was done to insure a fair

BEST COPY AVAILABLE

distribution of funding across the state. Within each of these regions, the distribution of grants across counties was varied. Rural counties showed the greatest variation with a range of 0 percent to 83 percent of the schools being funded. Some large urban counties had as few as 1.8 percent of their schools funded while others had as many as 6.3 percent funded. Schools funded in suburban counties ranged from 1.5 to 8 percent. Statewide, 5.2 percent of the schools were funded.

Most school districts that were entitled to receive significant levels of Proposition 98 Supplemental Grant funding did not apply for AB 1470 grants. These were districts that were moderately below the state average in per-pupil funding and tended to be impacted urban or low income rural areas. There were exceptions in that some districts applied for and accepted AB 1470 funding even though it reduced their supplemental grant levels. Due to the Supplemental Grant issue, a few districts have not yet determined whether or not they will accept their AB 1470 grants. These decisions may slightly alter some of the data in this report.

Demographics: A variety of information was gathered from the demographics section of the school profile. The average number of students reported to be served by each school was 620, with a range of 15 to 3497. Figure 3 shows the percentages of funded secondary school grants serving each subject area department. English-language arts and history-social science were the most common departments to be included secondary school grant proposals, followed by Science and then Math. Figure 4 shows the percentages of funded grants serving the various state-wide special programs. As illustrated, 72 percent of the projects include Special Education, 53 percent include Gifted and Talented Education (GATE), and one third include Bilingual Education.

Figure 3: Secondary School Departments Served by Funded Projects

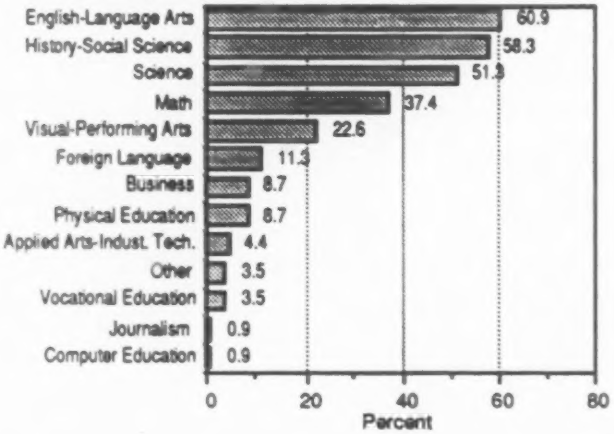


Figure 4: Special Programs Served by Funded Schools

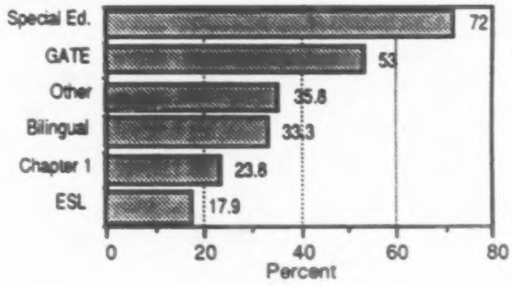


Figure 5 shows the statewide percentage of schools by grade level that received AB 1470 grants. The "other" category on this graph includes Special Education, County Operated, Continuation, and Alternative schools. Figure 6 shows the percentage of the statewide student population that will be impacted by the projects.

Figure 5: Statewide Percent of Schools Receiving Grants by Grade Level

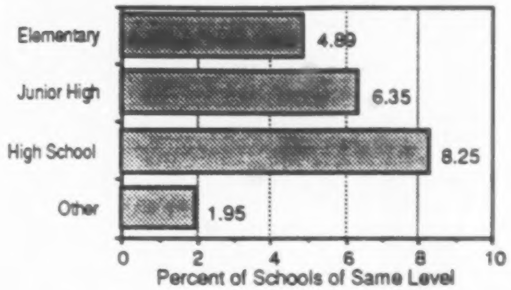
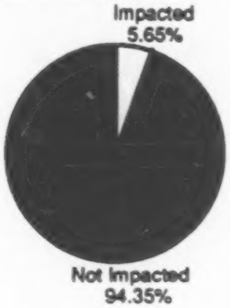
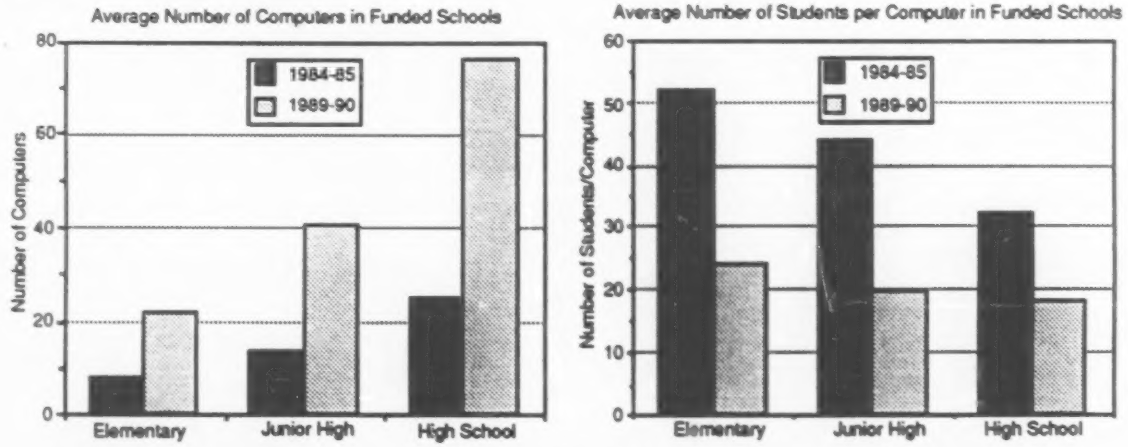


Figure 6: Percentage of Students Impacted Statewide



Technology Access and Use: A significant increase was found in the level of existing technology access between 1984-85 grants and approved 1989-90 grant applicant sites. Figure 7 shows the average number of computers that existed in funded schools and the average number of students per computer for both 1984-85 and 1989-90 funded technology grants before the grants were awarded. This is the number of computers that the schools had before receipt of the current grant funding. The increase is a function of the number of computers purchased with AB 803 and other funding sources between 1984-85 and 1989-90. The average number of computers per school, as reported by grant applicants, more than doubled between 1984 and 1990 with a corresponding decrease in the ratio of students per computer. *Because these data are specific to previous AB 803 and present AB 1470 funded schools, the findings should not be generalized to other schools in the state.*

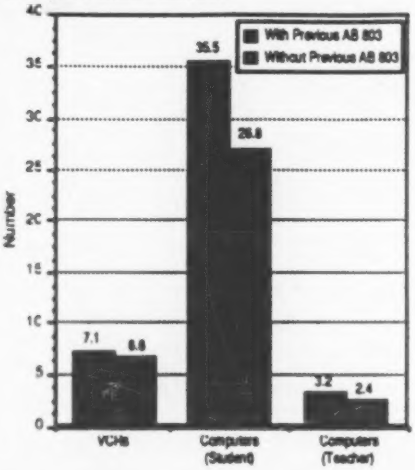
Figure 7: Access to Computers


Average Number of Computers in Funded Schools

Average Number of Students per Computer in Funded Schools

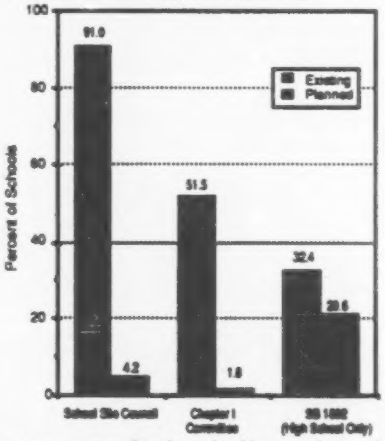
A majority (60%) of funded schools in 1989-90 had previously received AB 803 Adoption/Expansion Grants. Figure 8 shows the average number of VCRs, computers for student use, and computers for teacher use in schools that had previously received AB 803 technology grants and in schools that had not received them. As expected, schools that had received AB 803 funding reported greater computers and VCRs than schools that had not received prior AB 803 funding. Almost all schools (96%) reported that they had access to technology resources, information, and software through school, district, or county libraries or media centers. Schools that did not have access to these resources were more often in isolated rural areas.

Figure 8: Average Number of Computers and VCRs per Funded School



School-Based Programs and Planning Committees: As shown in Figure 9, most AB 1470 grant recipients reported that School Site Councils were involved in technology use planning for the proposal. To a lesser degree, Chapter 1 and SB 1882 committees were also involved in technology use planning. The percentages charted in figure 9 are also representative of the number of schools that are implementing School Improvement Programs (SIP), Chapter I, and SB 1882 School Development programs.

Figure 9: School-Based Planning Committees Involved in Technology Use Planning



Areas of Emphasis: Grant applicants were asked to indicate the primary and secondary areas of emphasis for their proposed projects. These areas include subject matter as well as other topics such as staff development, learning environment, problem solving and school-home communication. Figure 10 shows the percentage of schools that indicated primary and secondary emphasis in each subject area. Figure 11 shows the percentages for the other areas of emphasis. As is clearly shown, English-language arts and staff development are a top priority for the use of school-based grant funding.

BEST COPY AVAILABLE

Figure 10: Subject Emphasis of Funded Grants

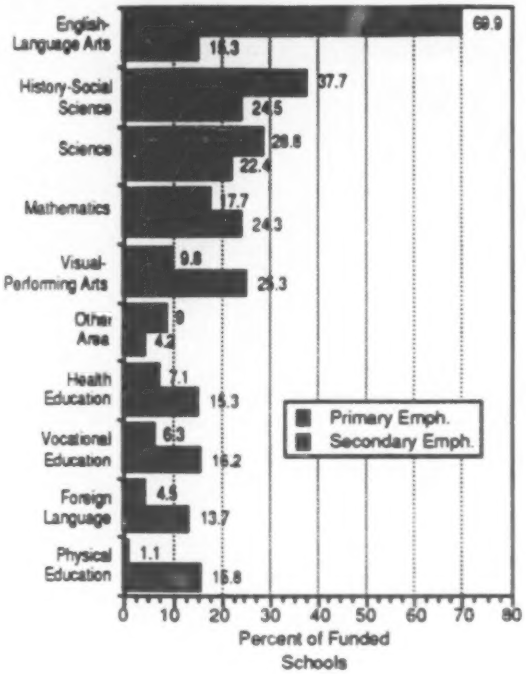
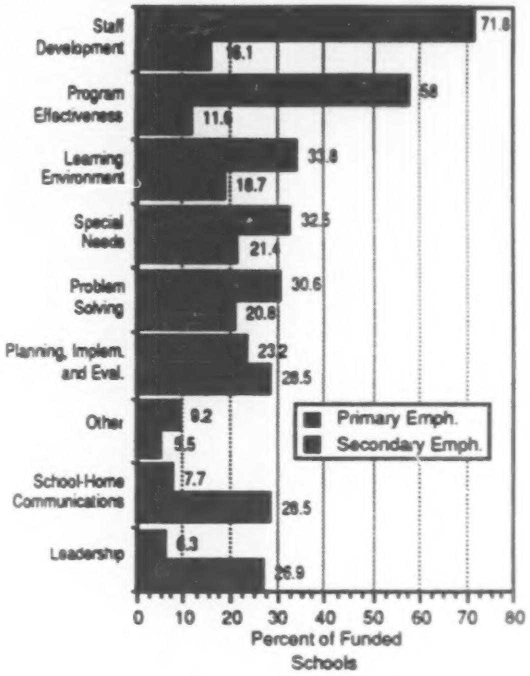


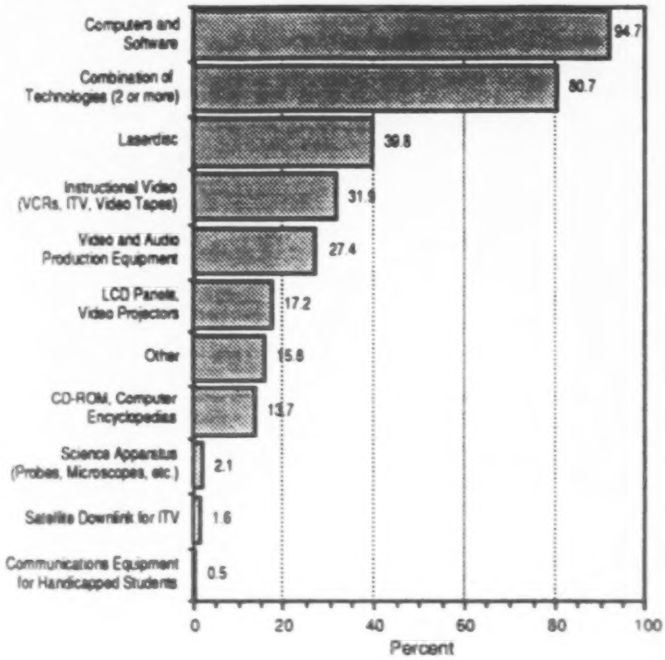
Figure 11: Other Areas of Emphasis of Funded Grants



Project Resource Allocations: Data on project allocations of funding for staff development and technology was obtained from the proposed budget of the grant applications. The average amount of state funding allocated per school for teacher staff development released time was $844, with a range from $0 to $12,200. Many districts provided funding for released time with the matching allocation rather than with the state grant funds. For the schools that allocated matching funds only, the average amount for released time was $1,415. Eighty-four percent of the schools allocated funding for outside staff development consultants. Approximately eleven percent of the total state funds allocated to school-based grants were allocated to staff development and related resources. When matching funds are included, more than fifteen percent of the school-based grants budgets are allocated for staff development.

Most funded projects will be purchasing a variety of technology hardware and software. Figure 12 shows the relative popularity of different technology items that funded schools plan to purchase. Most projects (81%) allocated funding for more than one type of technology.

Figure 12: Types of Technology to be Purchased by Projects



Summary of Findings for 1989-90.

1. The first funding year of AB 1470 School-Based Educational Technology Grants funded 321 projects in 379 schools. The average grant size is about $20,000 with a range from $2,750 to $89,850.
2. The regional California Technology Project (CTP) Consortia staff assisted in the development of most of the funded projects through project planning and development workshops (over 100 provided statewide) and individualized assistance to school staff when possible.
3. The California Department of Education (CDE) played a major role in developing and implementing the guidelines as well as providing the training and assistance to the CTP needed for the consortia to be able to assist in project development.
4. Twenty-four percent (90) of the grants are planned adoptions/adaptations of the Level II MTS Projects that the state is currently funding for statewide dissemination.
5. Due to a variety of factors, it was not possible to equally distribute AB 1470 funded projects across schools.
6. Secondary school departments involved in School-Based Educational Technology Grants tended to be predominantly English-language arts, history-social science, and science.
7. Students with special needs appear to be well represented in the projects.
8. The $6.1 million allocated for School-Based Educational Technology Grants impacted 5.6% of the students statewide with a higher percentage of secondary students affected.
9. The average number of computers *in schools approved for educational technology grants* doubled at elementary and nearly tripled at secondary levels since 1985.
10. Previous (AB 803) funding contributed more to the total number of computers for student use and much less to the number of VCRs and computers for teacher use.

11. Almost all schools reported involvement of School Site Councils, Chapter I, and SB 1882 committees in technology use planning if these committees existed in the school site.
12. The primary subject area emphasized was English-language arts, with other major areas of emphasis for teachers being staff development and overall program improvement.
13. Budget analysis indicates that over 10% of state funding was allocated for staff development resources, and when matching funds are included, this well exceeds 15%.
14. Though computers and software were the major allocation, over 80% of the projects included a combination of technologies.
15. Over one half of the projects included video, with 32% including ITV, and six schools acquiring satellite downlinks for ITV and distance learning.
16. The CDE budgeted almost one half of the 1989-90 AB 1470 funding for the School-Based Grants program, with most of the balance funding projects and regional services that directly support the development and implementation of the school-based projects.
17. No relationship or correlation was found between the grant application review scores and their region, the amount applied for, or the existence of prior successful grant applications.
18. An in-depth evaluation and analysis of the impact of all programs and projects funded by AB 1470 will be conducted during 1990-91.

Appendix B

School-Based Educational Technology Grants Assessment Instruments

- Self-Assessment Inventory
- Telephone Interview Questions
- Technology Use Survey
- Student Technology Use Survey

SCHOOL-BASED EDUCATIONAL TECHNOLOGY GRANTS

TELEPHONE INTERVIEW QUESTIONS

Far West Laboratory **March 1991**

School________________________ District ____________ Region______________

Contact Person____ Phone (___)________

Date of Interview___/___/___ Time________ CDS Code____________________

Person Conducting Interview_______

A. Assemble and review the following information prior to conducting interview: project grant proposal, database record, School-Based Educational Technology Project Rating Sheet.

B. Verify receipt of Self-Assessment Inventory. What is the current status of the inventory (working on, completed, who is filling out, will it be completed on time, etc.)?

C. Interview Questions

1. Planning

- Why did your school apply for this grant?

- Describe the planning process that took place with your project.

- How has planning for this project been incorporated into the existing school-based planning process? (give examples that demonstrate how educational technology has been incorporated into the school plan as an educational strategy)

- Describe how the project was integrated with other school/district(s) initiatives (i.e., Chapter 1, SIP, SB 1882 (High School only), Special Education, Vocational Education, School-based Planning, etc.)

BEST COPY AVAILABLE

2. Curricular Alignment

   - Describe how your project contributed to curriculum alignment in the areas of:
     - Student needs
     - Staff needs
     - Program needs

3. Implementation

   - Describe what has been accomplished in the areas of:
     - Staff development
     - Resource management (both existing and purchased)
     - Management and support of project

4. Project Objectives

   - Describe the outcomes of the project. How was each measured?
   - Describe specifically the impact of the project on:
     - Students: Changes in student performance, attitude, and motivation directly attributed to the project
     - Teachers: Changes in teaching style and strategies which can be directly attributed to the project
     - Parents: Reaction and/or involvement in the school or in their child's education which can be directly attributed to the project

- Business Partnerships: Were any developed, expanded, or lost as a result of the project?

- Describe changes that have occurred in the school such as scheduling, staff roles, classroom environments, etc., as a result of the project

5. Activities

- Describe the major activities implemented. Was your timeline followed - i.e., What didn't get done, what did you do in addition to what was originally planned?

6. Evaluation

- Describe the project evaluation plan and the evaluation activities that were completed.

- Summarize the evaluation findings for:
    - Pupil performance/attitudes/behaviors

    - Staff development

    - Management of learning resources

- What restricting factors did you find that impeded the efficient, effective use of technology?

- Did you or any one from the project attend a CTP workshop?

- Did you collect any samples of student work? Describe. (Please mail copies of samples collected)

7. Staff resources

   - Describe the adequacy of support given the project in terms of staffing, management, and time.
   - What were the major roles of staff members?
   - Was there enough time allocated to implement the project as planned?
   - Were the key players involved throughout the project, and how?

8. Funding

   - Did you have enough funding to adequately implement your project? Why or why or not?
   - From what sources did you receive revenues and /or in-kind support? Describe.

9. AB 1470 Resources

   - Did you adopt or adapt any portion of a Level I or II project - describe all resources of theirs used.
   - Did you utilize the services of an ITV agency? Describe all services of theirs you used.
   - Did you utilize the services of the California Technology Project (CSUNET, workshops, evaluation handbook, etc.)? Describe all services of theirs you used.
   - Which of the above services were useful? Why?

- Do you have any recommendations about which of the above service agencies should be continued with state funding? Describe.

- Did you use any other outside resources, i.e., local colleges etc.? Describe. What was their usefulness to your project?

10. Impact on Other Projects/Reviews

- Did your school apply for an AB 1274 School Restructuring Planning Grant? Why or why not?

  If yes, describe how the AB 1470 project was addressed in the SB 1274 proposal.

- Summarize any findings or references to the technology project in your school; self study, PQR, or WASC reports.

  If reference was made, would you photocopy relevant sections and mail them to use (give address and determine date for completion)

11. Conclusions

- Have there been any surprises or unanticipated findings? What were they?

- Were there any factors that especially supported or impeded your project? What were they? Why were they a support or impediment?

- What would you do differently next time?

- Do you have any additional comments or recommendations about your project or the School-Based Educational Technology Grant program?

- Do you think your project has merit? Why?

BEST COPY AVAILABLE

- Would you recommend that other schools utilize your model? Why? Which components?

D. Inventories: Students and Teachers (representative cross-sampling)

- Discuss the inventories and obtain the number of teachers/students to be surveyed.

  Number of teachers__________ Number of students__________

  Number of Classess__________ Which grades__________

- Arrange for the administration and return of the surveys by the contact person.

  Deadline date for return__________

E. Project Rating

- After the interview is concluded, rate the project using the 200 point scale (Note: Categories on this questionnaire correspond to questions on the rating sheet).

SCORE______________

SCHOOL-BASED EDUCATIONAL TECHNOLOGY GRANTS

TECHNOLOGY USE SURVEY

Far West Laboratory **April 1991**

School____________________________________ District __________________

Teacher Name____________________________________ Phone (____)________

This survey is designed to determine your reactions to the AB 1470 Educational Technology Project at your school. Your honest responses to these questions will be appreciated.

I. Background

1. Subjects taught (circle all that apply):

Multiple subjects (elementary level)	1
English-Language Arts	2
History-Social Science	3
Mathematics	4
Science	5
Foreign Languages	6
Visual and Performing Arts	7
Health Education	8
Physical Education	9
Vocational Education	10
Special Education	11
Computer Education	12

2. Grades taught (circle all that apply): **K 1 2 3 4 5 6 7 8 9 10 11 12**

3. Involvement in AB 1470 project (circle one):

Directly	1
Indirectly	2
Not at all	3

II. Access and Use of Technology

1. Rate the accessibility of the following equipment and your level of use (circle one for each item in each category):

Equipment	Availability in Classroom					Level of use				
	Not at all		Moderate		Excellent	Not at all				Often
a. Computer	1	2	3	4	5	1	2	3	4	5
b. TV/Monitor for ITV	1	2	3	4	5	1	2	3	4	5
c. VCR	1	2	3	4	5	1	2	3	4	5
d. Laserdisk	1	2	3	4	5	1	2	3	4	5
e. CD-ROM	1	2	3	4	5	1	2	3	4	5
f. LCD display panel	1	2	3	4	5	1	2	3	4	5
g. Other:____________	1	2	3	4	5	1	2	3	4	5

III. School use of technology and benefits

1. Does your school include technology use in its School Improvement (or other) Plan (circle one):

Yes	1
No	2
Not sure	3

2. Have you been involved in planning for technology use at your school (circle one):

Yes	1
No	2

Briefly describe your involvement:

3. To what extent did the AB 1470 grant in your school increase emphasis on or facilitate the following activities (circle the appropriate rating for each item below):

	Not at all		Moderately		Significantly
a. School-Based Technology Use Planning	1	2	3	4	5
b. District Technology Use Planning	1	2	3	4	5
c. Management of Learning Resources	1	2	3	4	5
d. Integration of Technology into the Curriculum	1	2	3	4	5
e. Use of technology in other School Programs	1	2	3	4	5
f. Staff Development for Technology Use	1	2	3	4	5
g. Inclusion of Technology into the School Plan	1	2	3	4	5

4. Indicate the importance or value that you place on the use of technology to support the instructional program(circle the appropriate rating for each item below):

	None		Moderate		Significant
a. Computer technology	1	2	3	4	5
b. Instructional Television &Video	1	2	3	4	5
c. Multimedia (e.g. computer and video together)	1	2	3	4	5
d. Other:______________________	1	2	3	4	5

5. Indicate the level of importance or value that each of the following individuals place on the use of technology to support the instructional program.(circle the appropriate rating for each item below):

	None		Moderate		Significant
Teachers					
a. Computer technology	1	2	3	4	5
b. Instructional Television &Video	1	2	3	4	5
c. Multimedia (e.g. computer and video together)	1	2	3	4	5
d. Other:______________________________	1	2	3	4	5
Parents					
a. Computer technology	1	2	3	4	5
b. Instructional Television &Video	1	2	3	4	5
c. Multimedia (e.g. computer and video together)	1	2	3	4	5
d. Other:______________________________	1	2	3	4	5
Students					
a. Computer technology	1	2	3	4	5
b. Instructional Television &Video	1	2	3	4	5
c. Multimedia (e.g. computer and video together)	1	2	3	4	5
d. Other:______________________________	1	2	3	4	5
Administrators					
a. Computer technology					
b. Instructional Television &Video	1	2	3	4	5
c. Multimedia (e.g. computer and video together)	1	2	3	4	5
d. Other:______________________________	1	2	3	4	5

	Not at all		Moderately		Significantly
6. Indicate the extent to which you feel your school has benefitted from the AB 1470 project (circle one):	1	2	3	4	5

	Not at all		Moderately		Significantly
7. Indicate the extent to which adequate funding existed for technology use in your school before it received the AB 1470 grant (circle one):	1	2	3	4	5

IV. Student Impact

1. Indicate the degree to which you believe technology causes an increase in the following student behaviors (circle one for each item):

	Not at all		Moderately		Significantly
a. Attendance at school/classes	1	2	3	4	5
b. Completion of classroom assignments	1	2	3	4	5
c. Student academic performance	1	2	3	4	5
d. Abilities to problem solve	1	2	3	4	5
e. Interest in school	1	2	3	4	5
f. Time engaged in assigned work	1	2	3	4	5
g. Initiative and proactivity	1	2	3	4	5
h. Working together collaboratively in groups	1	2	3	4	5

2. Think about your whole class (focus on one class if secondary). Do you feel that report card grades have improved as a result of technology use (circle one):

Yes	1
No	2
Not sure	3

3. If you answered yes above, estimate the percentage of students in your class that improved their grades (by at least one or more full grade points) as a result of technology use (write in percentage): .... % ________

4. Think of a particular student in your class that improved his/her grade as a result of technology use. Describe briefly the "story" of this student: what made the difference, what does the student do now that wasn't done before etc.:

Describe:

V. Teacher Impact:

1. Indicate the degree to which you believe technology causes an increase in a teacher's abilities and interest for each of the following (circle on for each item):

	Not at all		Moderately		Significantly
a. Developing units/lessons	1	2	3	4	5
b. Managing classrooms	1	2	3	4	5
c. Assessing progress	1	2	3	4	5
d. Saving preparation time	1	2	3	4	5
e. Planning for specific student needs	1	2	3	4	5
f. Integrating curriculum into the state frameworks	1	2	3	4	5
g. Supporting student-centered learning	1	2	3	4	5
h. Teaching (in general)	1	2	3	4	5
i. Working collaboratively with colleagues	1	2	3	4	5
j. Managing learning resources	1	2	3	4	5
k. Improving skills through staff development	1	2	3	4	5

VI. Support Resources

1. Indicate the extent to which you believe each of the following was accessible and your level of use for implementation of the AB 1470 project (circle one for each item in each category):

	Accessibility					Level of Use				
	Not at all		Moderate		Excellent	Not at all				Often
a. District administrative support for project activities	1	2	3	4	5	1	2	3	4	5
b. School administrative support for project activities	1	2	3	4	5	1	2	3	4	5
c. California Technology Project Resources	1	2	3	4	5	1	2	3	4	5
d. Level I MTS resources (if applicable)	1	2	3	4	5	1	2	3	4	5
e. Level II MTS resources (if applicable)	1	2	3	4	5	1	2	3	4	5
f. ITV Agency resources (if applicable)	1	2	3	4	5	1	2	3	4	5
g. TRIE/CSUNet electronic bulletin board provided by the CTP	1	2	3	4	5	1	2	3	4	5
h. Staff development activities	1	2	3	4	5	1	2	3	4	5
i. Time allocated for planning and implementing project	1	2	3	4	5	1	2	3	4	5
j. Parent involvement and support	1	2	3	4	5	1	2	3	4	5
k. Access to equipment	1	2	3	4	5	1	2	3	4	5

Please return this completed form to the designated project leader or coordinator at your school by ___/___/___

SCHOOL-BASED EDUCATIONAL TECHNOLOGY GRANTS

STUDENT TECHNOLOGY USE SURVEY

Far West Laboratory April 1991

Name_________________________ Teacher ______________________________

School_____________ Grade_____ Period_____ Date____/____/____

Recently teachers in your school have been involved in a project using technology (computers, laser discs, VCRs, camcorders, etc.). Please answer the following questions as honestly as possible so that we can use your answers in our study.

1. Think about all of your classes. How often have you or your teacher used each type of technology in school this year? (circle one number for each type of technology):

	Don't know	Not at all	Once a month	At least once a week	Once a day	Several times a day
a. Computer	1	2	3	4	5	6
b. Television	1	2	3	4	5	6
c. VCR	1	2	3	4	5	6
d. Laserdisks	1	2	3	4	5	6
e. CD-ROM	1	2	3	4	5	6
f. Camcorder	1	2	3	4	5	6

2. Where do you use computers? (circle the number of each item that applies):

In the classroom	1
After school	2
At lunch time	3
At the library	4
At the computer lab	5
At home	6

3. What do you use computers for? (circle the number of each item that applies):

To do reports and research	1
To do assignments in class	2
To play games	3

4. Which classes do you use computers in (circle the number of each item that applies):

English/writing/reading	1
Math	2
Science	3
Social Studies/history/geography	4
Foreign Language	5
Art or Music	6

5. Indicate how much technology has improved your abilities in each of the following (circle one number for each):

	Not at all	A little	Some	A lot
a. Studying	1	2	3	4
b. Writing	1	2	3	4
c. Reading	1	2	3	4
d. Solving problems	1	2	3	4

5. Indicate how much technology has improved each of the following for you (circle one number for each):

	Not at all	A little	Some	A lot
a. Your grades	1	2	3	4
b. Your attendance	1	2	3	4
c. Your attitude about going to school	1	2	3	4
d. Your feelings about yourself	1	2	3	4
e. Your ability to work with other students	1	2	3	4

6. Indicate how much more you enjoy your classes as a result of using technology (circle one number for each):

	Not at all	A little	Some	A lot
a. English/writing/reading	1	2	3	4
b. Math	1	2	3	4
c. Science	1	2	3	4
d. Social Studies/history/geography	1	2	3	4
e. Foreign Language	1	2	3	4
f. Art or Music	1	2	3	4

7. Indicate how much your grades have improved as a result of using technology in each of your classes (circle one number for each):

	Not at all	A little	Some	A lot
a. English/writing/reading	1	2	3	4
b. Math	1	2	3	4
c. Science	1	2	3	4
d. Social Studies/history/geography	1	2	3	4
e. Foreign Language	1	2	3	4
f. Art or Music	1	2	3	4

8. Describe how the increased use of technology at your school has made a difference for you:

____

____

____

____

____

____

APPENDIX B

Profile of the First Phase of School-Based Educational Technology Grants Program

Prepared by John Cradler, Educational Support Systems, August 1990

Since the inception of AB 1470 in 1989 the state has funded 595 School-Based Educational Technology Projects. Recently the State Board of Education approved the distribution of approximately $5.5 million for the third cycle of School-Based Educational Technology Grants. The Office of Educational Technology and the California Technology Project are now getting ready to distribute application forms and implement the process for AB 1470 grant development training for the third cycle of School-Based Grants. The following provides a profile of the 321 grants funded during first cycle of AB 1470 School-Based Grants.

The database from which the information was derived was developed using information included in the Cover, School Profile and Budget pages of the 321 proposals funded during Cycle I. These information categories include: school demographic data, type of technology to be used, curriculum areas to be emphasized, level of support for staff development, names of programs adopted or adapted, previous technology grants received, and other useful data. Additional data from CBEDS, and the 1984-85 AB 803 Educational Technology Local Assistance Program Annual Report were also used in developing this report. The California Technology Project (CTP) Coordinators were provided with the database in disk format so that they could select and target specific funded projects in their regions for information sharing, staff development, and technical assistance.

Applicants: The California Department of Education received 1,670 grant applications. Of these, 321 were funded. Because there were 12 multi-school consortium grants, 379 schools will actually receive funding. These 379 schools make up 5.15 percent of the schools in the state (See Figure 1). The average grant size was $19,500, with a range of $2,750 to $89,850.

Figure 1: Percentage of Schools Impacted Statewide

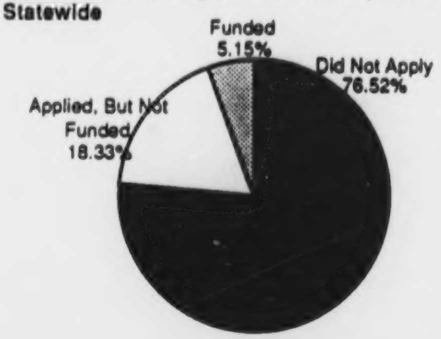


Figure 2: Grants Adopting/Adapting Level II Academic-Model Technology Programs

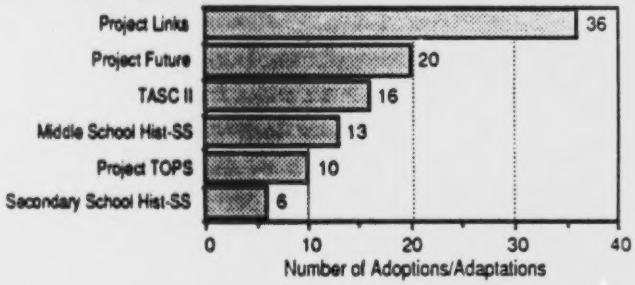


Figure 2 shows the number schools that adopted or adapted existing Level II Academic-Technology Model Projects. A total of 90 (24%) of the grants were adoptions of existing Level II projects and a few (20 schools) were adoptions or adaptations of Level I Model Technology School projects. The larger number of Level II adoptions is due to the fact that while the Level II projects are actively disseminating, the Level I schools are just now packaging and initiating dissemination of their projects. The Level II projects include: Project Links, an elementary English-language arts program; Project Future, a middle school language arts/technology project; TASC II, a middle school science project; the Middle School History-Social Science Program; Project TOPS, a K-6 science project; and the Secondary School History-Social Science Program.

Geographic Distribution of Grants: Funding allocations were equally distributed by student population across the 10 pre-established County Superintendents Regions. This was done to insure a fair

BEST COPY AVAILABLE

distribution of funding across the state. Within each of these regions, the distribution of grants across counties was varied. Rural counties showed the greatest variation with a range of 0 percent to 83 percent of the schools being funded. Some large urban counties had as few as 1.8 percent of their schools funded while others had as many as 6.3 percent funded. Schools funded in suburban counties ranged from 1.5 to 8 percent. Statewide, 5.2 percent of the schools were funded.

Most school districts that were entitled to receive significant levels of Proposition 98 Supplemental Grant funding did not apply for AB 1470 grants. These were districts that were moderately below the state average in per-pupil funding and tended to be impacted urban or low income rural areas. There were exceptions in that some districts applied for and accepted AB 1470 funding even though it reduced their supplemental grant levels. Due to the Supplemental Grant issue, a few districts have not yet determined whether or not they will accept their AB 1470 grants. These decisions may slightly alter some of the data in this report.

Demographics: A variety of information was gathered from the demographics section of the school profile. The average number of students reported to be served by each school was 620, with a range of 15 to 3497. Figure 3 shows the percentages of funded secondary school grants serving each subject area department. English-Language Arts and History-Social Science were the most common departments to be included secondary school grant proposals, followed by Science and then Math. Figure 4 shows the percentages of funded grants serving the various state-wide special programs. As illustrated, 72 percent of the projects include Special Education, 53 percent include Gifted and Talented Education (GATE), and one third include Bilingual Education.

Figure 3: Secondary School Departments Served by Funded Projects

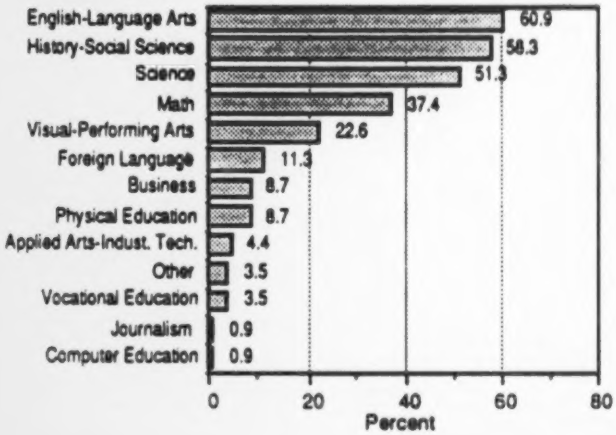


Figure 4: Special Programs Served by Funded Schools

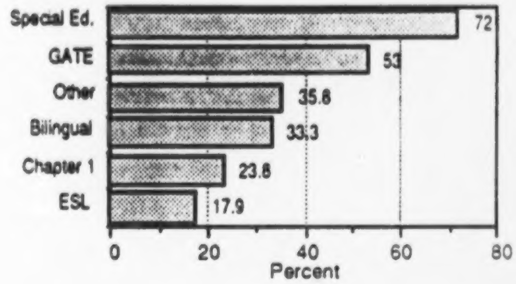


Figure 5 shows the statewide percentage of schools by grade level that received AB 1470 grants. The "other" category on this graph includes Special Education, County Operated, Continuation, and Alternative schools. Figure 6 shows the percentage of the statewide student population that will be impacted by the projects.

Figure 5: Statewide Percent of Schools Receiving Grants by Grade Level

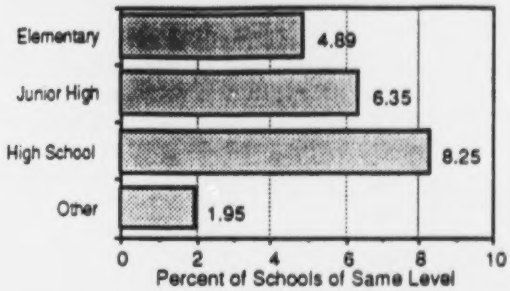
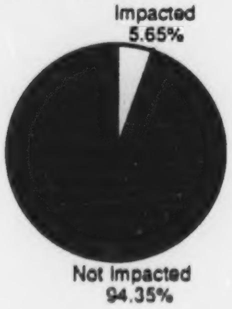
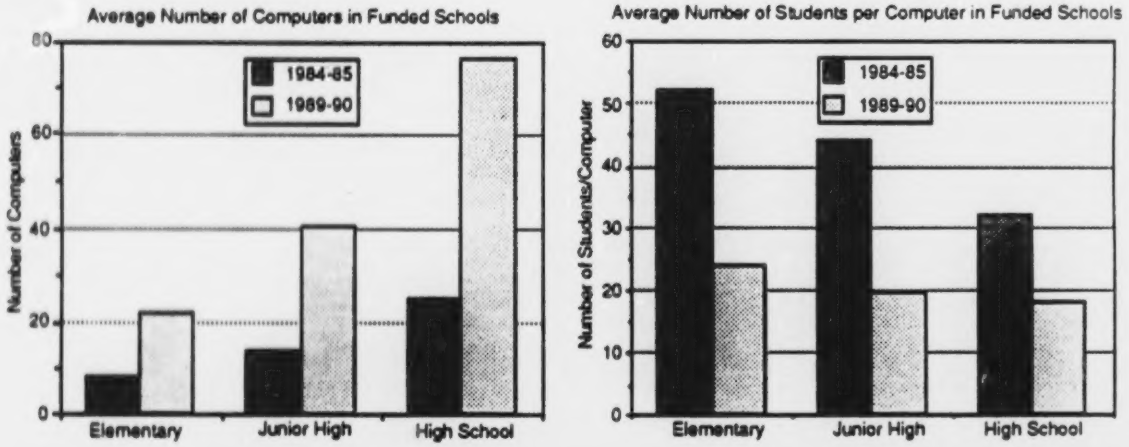


Figure 6: Percentage of Students Impacted Statewide



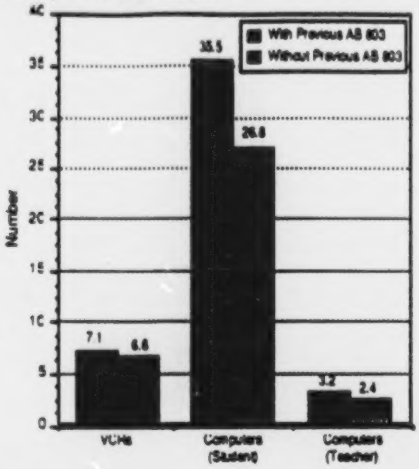
Technology Access and Use: A significant increase was found in the level of existing technology access between 1984-85 grants and approved 1989-90 grant applicant sites. Figure 7 shows the average number of computers that existed in funded schools and the average number of students per computer for both 1984-85 and 1989-90 funded technology grants before the grants were awarded. This is the number of computers that the schools had before receipt of the current grant funding. The increase is a function of the number of computers purchased with AB 803 and other funding sources between 1984-85 and 1989-90. The average number of computers per school, as reported by grant applicants, more than doubled between 1984 and 1990 with a corresponding decrease in the ratio of students per computer. *Because these data are specific to previous AB 803 and present AB 1470 funded schools, the findings should not be generalized to other schools in the state.*

Figure 7: Access to Computers



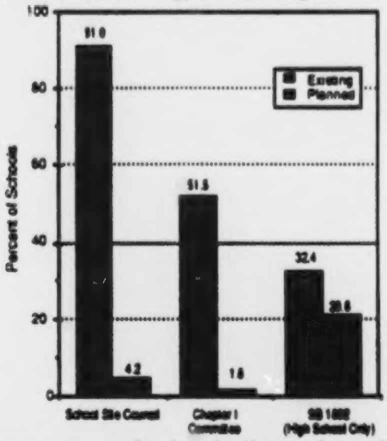
A majority (60%) of funded schools in 1989-90 had previously received AB 803 Adoption/Expansion Grants. Figure 8 shows the average number of VCRs, computers for student use, and computers for teacher use in schools that had previously received AB 803 technology grants and in schools that had not received them. As expected, schools that had received AB 803 funding reported greater computers and VCRs than schools that had not received prior AB 803 funding. Almost all schools (96%) reported that they had access to technology resources, information, and software through school, district, or county libraries or media centers. Schools that did not have access to these resources were more often in isolated rural areas.

Figure 8: Average Number of Computers and VCRs per Funded School



School-Based Programs and Planning Committees: As shown in Figure 9, most AB 1470 grant recipients reported that School Site Councils were involved in technology use planning for the proposal. To a lesser degree, Chapter 1 and SB 1882 committees were also involved in technology use planning. The percentages charted in figure 9 are also representative of the number of schools that are implementing School Improvement Programs (SIP), Chapter I, and SB 1882 School Development programs.

Figure 9: School-Based Planning Committees Involved in Technology Use Planning



Areas of Emphasis: Grant applicants were asked to indicate the primary and secondary areas of emphasis for their proposed projects. These areas include subject matter as well as other topics such as staff development, learning environment, problem solving and school-home communication. Figure 10 shows the percentage of schools that indicated primary and secondary emphasis in each subject area. Figure 11 shows the percentages for the other areas of emphasis. As is clearly shown, English-Language Arts and Staff Development are a top priority for the use of school-based grant funding.

Figure 10: Subject Emphasis of Funded Grants

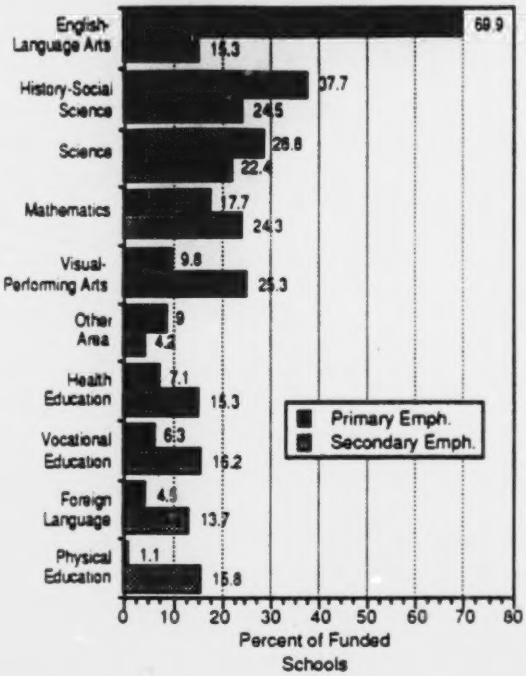
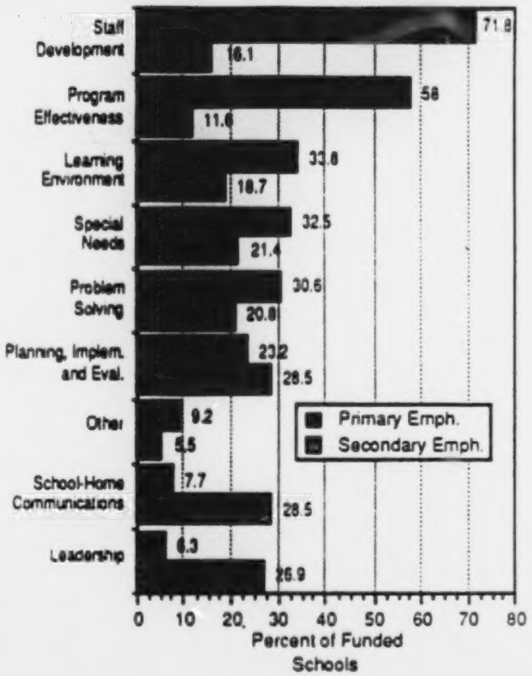


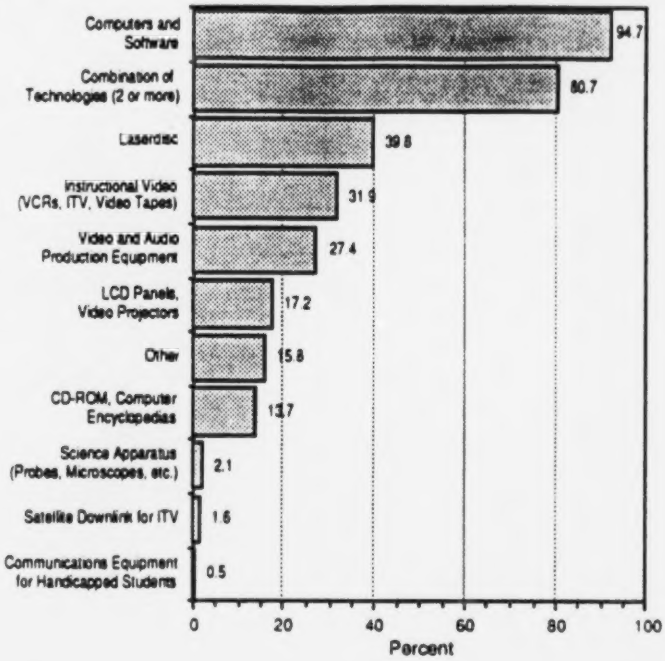
Figure 11: Other Areas of Emphasis of Funded Grants



Project Resource Allocations: Data on project allocations of funding for staff development and technology was obtained from the proposed budget of the grant applications. The average amount of state funding allocated per school for teacher staff development released time was $844, with a range from $0 to $12,200. Many districts provided funding for released time with the matching allocation rather than with the state grant funds. For the schools that allocated matching funds only, the average amount for released time was $1,415. Eighty-four percent of the schools allocated funding for outside staff development consultants. Approximately eleven percent of the total state funds allocated to school-based grants were allocated to staff development and related resources. When matching funds are included, more than fifteen percent of the school-based grants budgets are allocated for staff development.

Most funded projects will be purchasing a variety of technology hardware and software. Figure 12 shows the relative popularity of different technology items that funded schools plan to purchase. Most projects (81%) allocated funding for more than one type of technology.

Figure 12: Types of Technology to be Purchased by Projects



Summary of Findings for Cycle II.

Expenditures for School-Based Educational Technology Grants (1989-1991) (use a table like the one used for Phase I)

Summary of Project Implementation Findings

1. The first cycle of AB 1470 School-Based Educational Technology Grants funded 321 projects in 379 schools. The average grant size is about $20,000 with a range from $2,750 to $89,850.
2. The regional California Technology Project (CTP) Consortia staff assisted in the development of most of the funded projects through project planning and development workshops (over 100 provided statewide) and individualized assistance to school staff when possible.
3. The California Department of Education (CDE) played a major role in developing and implementing the guidelines as well as providing the training and assistance to the CTP needed for the consortia to be able to assist in project development.
4. Twenty-four percent (90) of the grants are planned adoptions/adaptations of the Academic Model Technology Projects that the state is currently funding for statewide dissemination.
5. Due to a variety of factors, it was not possible to equally distribute AB 1470 funded projects across schools.
6. Secondary school departments involved in School-Based Educational Technology Grants tended to be predominantly English-Language Arts, History-Social Science, and Science.
7. Students with special needs appear to be well represented in the projects.
8. The $6.1 million allocated for School-Based Educational Technology Grants impacted 5.6% of the students statewide with a higher percentage of secondary students affected.

9. The average number of computers *in schools approved for educational technology grants* doubled at elementary and nearly tripled at secondary levels since 1985.
10. Previous (AB 803) funding contributed more to the total number of computers for student use and much less to the number of VCRs and computers for teacher use.
11. Almost all schools reported involvement of School Site Councils, Chapter I, and SB 1882 committees in technology use planning if these committees existed in the school site.
12. The primary subject area emphasized was English-Language Arts, with other major areas of emphasis for teachers being staff development and overall program improvement.
13. Budget analysis indicates that over 10% of state funding was allocated for staff development resources, and when matching funds are included this well exceeds 15%.
14. Though computers and software were the major allocation, over 80% of the projects included a combination of technologies.
15. Over one half of the projects included video, with 32% including ITV, and six schools acquiring satellite downlinks for ITV and distance learning.
16. The CDE budgeted almost one half of the 1989-90 AB 1470 funding for the School-Based Grants program, with most of the balance funding projects and regional services that directly support the development and implementation of the school-based projects.
17. No relationship or correlation was found between the grant application review scores and their region, the amount applied for, or the existence of prior successful grant applications.
18. An in-depth evaluation and analysis of the impact of all programs and projects funded by AB 1470 will be conducted during 1990-91.

Far West
LABORATORY

To: AB 1470 School-Based Educational Technology Grant Recipients

From: John Cradler, Far West Laboratory

Subject: **State Required Project Self-Assessment and Evaluation Reporting**

Mandated Evaluation: The lack of systematic evaluation of the impact of technology projects that were supported by the AB 803 Adoption/Expansion Grant program, combined with a general desire for accountability on the part of the California Legislature, has made evaluation an important part of the projects funded under AB 1470, the Farr-Morgan-Quackenbush Educational Technology Act of 1989. AB 1470 requires the evaluation of the impact of project activities on teaching and learning and states that *"annual evaluation of the school-based adoption grants can serve as a useful tool for self-assessment, program improvements, and state level accountability and planning."*

Each project must submit an evaluation report to the California Department of Education within 30 days of the termination of the grant; ten percent of the grant funds will be withheld until an acceptable report has been submitted. An instrument known as the *School-Based Educational Technology Project Self-Assessment Inventory* has been developed by the statewide evaluation project that will gather the necessary information for the required evaluation.

The California Department of Education has determined that completion of the (enclosed) *School-Based Educational Technology Project Self-Assessment Inventory* will meet the requirement for an evaluation report.

In addition to meeting the state requirement for the evaluation report, the information will be used in the development of a statewide evaluation of the implementation and impact of the School-Based Educational Technology Projects. This and other evaluation information will provide the documentation needed by the legislature to guide new legislation for the future funding of educational technology in California.

Instructions: Enclosed are documents to assist you in meeting the final reporting requirements of your grant. These documents include the *Self Assessment Inventory*, and the *Guidelines and Template for the Optional Evaluation Report.*

A completed *Self-Assessment Inventory* is required by all grant recipients for each project site.

The completed inventories must be returned to *Far West Laboratory* by May 17, 1991. Far West Laboratory will notify the CDE as soon as the report is received. Upon receipt of the Inventory, the State will release the final ten percent of your grant funds. If you forsee any problem in meeting this deadline, contact John Cradler prior to May 17.

The enclosed *Guidelines and Template for the Optional Evaluation Report* is intended to serve as a guide for use in preparation of an optional narrative report. The narrative report is not a required, but is highly recommended for local recognition, support, and justification for future expansion of your project. Far West Laboratory and the CDE will not be collecting the narrative reports.

Assistance: John Cradler at the *Far West Laboratory* is available to provide assistance and answer questions as necessary. Contact John Cradler between 9:00 AM and 4:00 PM at (415) 565-3000.

Far West Laboratory For Educational Research and Development
730 Harrison Street San Francisco, CA 94107-1242 (415) 565-3000 FAX (415) 565-3012

BEST COPY AVAILABLE

SCHOOL-BASED EDUCATIONAL TECHNOLOGY PROJECT

SELF-ASSESSMENT INVENTORY

Far West Laboratory **November 1991**

The purposes of this Inventory are to: (1) answer important state policy-making questions, (2) fulfill the requirement for an end-of-project evaluation, and (3) create a database with information on each AB 1470 project which will be shared via CSUNet. Each project will receive a copy of the database of responses to this survey and will have access to additional information through CSUNet.

This Inventory has been developed to follow the evaluation format specified by the state and the *California Educational Technology Assessment Project* (CETAP). The questions are organized in a chronological sequence to stimulate responses regarding your project from inception through evaluation. The Inventory is divided into ten sections as follows:

I. Background Information
II. Planning
III. Content
IV. Implementation
V. Support Resources
VI. Funding Support
VII. Supporting and Impeding Factors
VIII. Outcomes
IX. Self-Assessment Summary
X. Recommendations

Instructions for Completing the Inventory

- **Who should complete the Self-Assessment Inventory?** The person with primary responsibility for implementing the project should gather the necessary information and complete the Inventory with input from the project committee and others directly involved in the project.

- **Where can the information and data be obtained?** Sources of data and information for completing this form are as follows: 1) input from staff participants in the project, 2) input from the planning committee, 3) the original project proposal, 4) school records, and 5) project evaluation data.

- **How are the questions to be answered?** Most of the information collected should be based on observations and perceptions of the staff members most involved with the project. Carefully review the Inventory and then go back and answer the questions as honestly as possible. It is important to be honest about all responses so that the information can be used to provide a valid assessment of School Based Educational Technology Projects throughout the state. Projects and schools will not be judged in any way from this information.

- **Do multi-school projects complete a form for each school?** Yes, because each school has its own Technology Use Plan. The projects are site-based and must be evaluated as separate projects. If you feel that your project is an exception, please call to discuss your concerns.

- **When is the inventory due?** The Inventory must be completed and returned **NO LATER THAN** ____________.

- **Where is the completed Inventory to be mailed?** When the Inventory has been completed, it must be returned to the address below.

- **How can assistance be obtained?** If any questions or problems arise while completing this Inventory, please contact John Cradler, Program Director for Educational Technology and Policy at Far West Laboratory at the address/phone number below.

John Cradler	**Phone: (415) 565-3018**
Far West Laboratory	**FAX: (415) 565-3012**
730 Harrison Street	**AppleLink: K1686**
San Francisco, CA 94107-1242	**CSUNet: jcradle**

- **How is a report for local use to be prepared?** A template for completing a local report on the project is included as part of this packet. **This report is optional** but may be desirable in cases where the school wishes to apply for additional funds, obtain local support, and gain recognition for the accomplishments of the project. The *Template* is designed to correlate with the *Inventory* and will provide the needed guidelines and format for the report.

SECTION I: BACKGROUND INFORMATION

A. School Demographics

1. School: ______________________________
Address: ______________________________
City: ____________________ ZIP: __________
District: ______________________________
County: ______________________________

CDS CODE						
County Code		District Code				
School Code						

2. a. School contact person: ____________________ Title: __________ Ph: __________
b. District contact person: ____________________ Title: __________ Ph: __________

3. Person responsible for completing this form: ____________________ Title: __________
Ph: __________ Date: ___/___/___

4. Current school enrollment (based on Fall 1991 CBEDS data): .... #__________

5. Total number of teachers: .... #__________

6. Total number of schools served by project: .... #__________

7. School location (circle one):
Rural 1
Suburban 2
Urban 3

8. School level (circle one):
Elementary 1
Middle/Junior High 2
High 3

9. Ethnic distribution of students:

a. Asian .... _____ %	d. Hispanic .... _____ %
b. Black .... _____ %	e. Native American .... _____ %
c. Caucasian .... _____ %	f. Other: (Specify) ______________ .. _____ %

B. Project Demographics

1. Project name: ______________________________

2. Grades served by the project (circle): **K 1 2 3 4 5 6 7 8 9 10 11 12 Ungraded**

3. Actual number of students directly served by the project: .... #__________

4. Estimated number of additional students indirectly benefiting from the project: .... #__________

5. Out of the total number of students directly served by the project, estimate the percentage of the following targeted student populations:

a. Bilingual .. ______ %	d. ESL .... ______ %	g. Special Ed. ______ %
b. Chapter I .. ______ %	e. GATE .... ______ %	h. Other .... ______ %
c. Chapter II .. ______ %	f. ROP .... ______ %	

6. Actual number of teachers directly involved in the project: .... #__________

7. Estimate the number of teachers indirectly involved in the project:.............................. #__________

8. Number of administrators assisting the project: .... #__________

9. Number of others (volunteers, parents, etc) involved in the project: .... #__________

SECTION II: PLANNING

A. Planning for Project Development

1. To what extent did the AB 1470 application process and related pre-planning increase emphasis on or facilitate the following activities? (circle the appropriate rating for each item below):

	Not at All		Moderately		Significantly
a. School-Based Technology Use Planning	1	2	3	4	5
b. District Technology Use Planning	1	2	3	4	5
c. Management of Learning Resources	1	2	3	4	5
d. Integration of Technology into the Curriculum	1	2	3	4	5
e. Coordination with other School Programs	1	2	3	4	5
f. Staff Development for Technology Use	1	2	3	4	5
g. Inclusion of Technology into the School Plan	1	2	3	4	5

2. To what extent did the application guidelines and forms assist in conceptualizing your proposal? (circle one):

Not at All		Moderately		Significantly
1	2	3	4	5

3. To what extent does/did the AB 1470 School-Based Grant proposal serve as a "working document" to guide project implementation? (circle one):

Not at All		Moderately		Significantly
1	2	3	4	5

4. Complete the table below as follows:
   - Circle **Y** if you used the source of assistance while completing your proposal, **N** if you did not or n/a if you were not aware of it or it was not available.
   - Rate the usefulness of the sources by circling the appropriate number.

Source of Assistance:	Used?			Usefulness				
				Not Useful		Moderately Useful		Very Usefu
a. Teachers (mentor teachers, resource spec., etc.)	Y	N	n/a	1	2	3	4	5
b. Site Administrators	Y	N	n/a	1	2	3	4	5
c. District office staff	Y	N	n/a	1	2	3	4	5
d. Contractual consultant	Y	N	n/a	1	2	3	4	5
e. California Technology Project (CTP) staff	Y	N	n/a	1	2	3	4	5
f. County office of education staff	Y	N	n/a	1	2	3	4	5
g. Instructional Television (ITV) Agency workshop or assistance	Y	N	n/a	1	2	3	4	5
h. CTP workshop	Y	N	n/a	1	2	3	4	5
i. AB 1470 Telephone Hotline	Y	N	n/a	1	2	3	4	5
j. CSUNet information	Y	N	n/a	1	2	3	4	5
k. Level I Model Technology School Project	Y	N	n/a	1	2	3	4	5
l. Level II Academic Model Technology School Project	Y	N	n/a	1	2	3	4	5
m. Other:____________________ ____________________	Y	N	n/a	1	2	3	4	5

B. Planning for Project Implementation

1. Identify the group(s) that served as the planning committee for the project (circle all that apply):

School Site Council	1
Chapter I Committee	2
Committee established specifically for the project	3
Other (describe):____________________	4

2. Indicate the statement below that best describes the technology use plan (TUP) in your school (circle one):

Technology use is written into existing School Improvement Plan.	1
Technology use is written into existing Chapter I Plan.	2
Technology use is written into the ____________________(specify) Plan.	3
A separate TUP was developed.	4

3. To what extent does the school TUP correspond to the district TUP? (circle one):

A district TUP does not exist.	1
The school plan incorporates some district planning elements.	2
The school plan closely supports the district plan.	3
The school plan did not support the district plan.	4
The school plan was not used	5

4. Rate the extent to which the project was coordinated with other programs at the school/district level (circle one for each item below):

	Not at All		Moderately		Significantly
a. SIP	1	2	3	4	5
b. School Site Council	1	2	3	4	5
c. Subject Matter Project	1	2	3	4	5
d. Chapter I	1	2	3	4	5
e. Bilingual/ESL	1	2	3	4	5
f. School-Based Coordinated Program	1	2	3	4	5
g. ROP	1	2	3	4	5
h. Special Education/RSP	1	2	3	4	5
i. GATE	1	2	3	4	5
j. SB 1274 "Planning to Plan" restructuring project	1	2	3	4	5
j. Other:____________________	1	2	3	4	5

5. Describe the aspects of the planning process that were most beneficial to implementation of the project activities:

Description:

6. Describe the aspects of the planning process that were least helpful in implementing project activities:

Description:

7. To what extent was evaluation an integral part of the planning process (circle one): .... Not at all 1 2 Moderately 3 4 Significantly 5

8. To what extent did evaluation planning assist in project direction and guidance (circle one): .... Not at all 1 2 Moderately 3 4 Significantly 5

SECTION III: CONTENT

A. Areas of Focus

1. Indicate the major areas emphasized by the project (circle **M** if major emphasis, **S** if secondary emphasis, or **N** if no emphasis):

Curriculum Areas

a. English-Language Arts .... **M S N**
b. History-Social Science .... **M S N**
c. Mathematics .... **M S N**
d. Science .... **M S N**
e. Foreign Languages .... **M S N**
f. Visual and Performing Arts .... **M S N**
g. Health Education .... **M S N**
h. Physical Education .... **M S N**
i. Vocational Education .... **M S N**
j. Other:____________________ .. **M S N**

School-Wide Areas

a. General technology use .... **M S N**
b. Technology in the curriculum .... **M S N**
c. School restructuring .... **M S N**
d. Professional development .... **M S N**
e. School climate improvement .... **M S N**
f. Other:____________________ .. **M S N**

Process Areas

a. Critical thinking .... **M S N**
b. Cooperative learning .... **M S N**
c. Study Skills .... **M S N**
d. Self-esteem .... **M S N**
e. Interest/attitude .... **M S N**
f. Other:____________________ .. **M S N**

2. To what extent did the focus of the project match the needs of the school (circle one): .... Not at all 1 2 Moderately 3 4 Significantly 5

B. Technology Applications

1. Indicate the type(s) of technology used in the project (circle **M** if major emphasis, **S** if secondary emphasis, or **N** if no emphasis):

a. Computers .... M S N
b. Laserdisc/Interactive Video .... M S N
c. Instructional Television (ITV) .... M S N
d. Cable television .... M S N
e. Audio/video production (Video cameras, camcorders, editing equipment) .... M S N
f. Satellite downlink for ITV reception/distance learning .... M S N
g. LCD Panels, Video Projectors .... M S N
h. CD-ROM .... M S N
i. CD-I or CDTV .... M S N
j. Technology for the handicapped (special keyboards, large print, etc.) .... M S N
k. Science Lab Equipment (probes, microscopes, weather instruments, etc.) .... M S N
l. Calculators .... M S N
m. Audio tape .... M S N
n. Telecommunications (telephone, modem, FAX) .... M S N
o. Music (keyboards, MIDI interfaces, sound digitizers, audio equipment, etc.) .... M S N
p. Networking of computers in classroom .... M S N
q. Other: (describe)______________________ .... M S N

2. To what extent has technology use has become more diverse as a result of the project (circle one): ....

Not at all		Moderately		Significantly
1	2	3	4	5

3. Indicate the software type(s) used by the project (circle **M** if major emphasis, **S** if secondary emphasis, or **N** if no emphasis).

a. Word processing .... M S N
b. Desktop publishing .... M S N
b. Integrated Learning Systems (ILS) .... M S N
c. Computer Assisted Instruction (CAI) System .... M S N
d. Hypercard/Stacks .... M S N
e. Graphics programs .... M S N
f. Electronic encyclopedia, reference .... M S N
g. Multimedia CD-ROM or videodisc used with computer .... M S N
g. Database, spreadsheet, other business software .... M S N
h. Music, voice, speech recognition .... M S N
i. Programming (Basic, Pascal, C, LOGO, Fortran, etc.) .... M S N
k. Other instructional software (Not CAI or ILS) .... M S N
l. Telecommunications software .... M S N
m. Computer Assisted Drafting (CAD) .... M S N
m. Other: (describe)______________________ .... M S N

4. List the five most widely-used software/video/laserdisc/CD-ROM titles for this project, and rate the effectiveness for each title in supporting the project's objectives:

> *NOTE: In order to rate the effectiveness of these products, we suggest that you ask for the assistance of those staff members who most frequently used them. This information will be added to the state evaluation database and shared among schools.*

Exact Title	**Publisher**	**Type of Media*** (circle)				**Level Of Effectiveness** (circle)				
						None		Moderate		Significant
1.		S	V	L	C	1	2	3	4	5
2.		S	V	L	C	1	2	3	4	5
3.		S	V	L	C	1	2	3	4	5
4.		S	V	L	C	1	2	3	4	5
5.		S	V	L	C	1	2	3	4	5

* Type of media: S = Software, V = Video, L = Laserdisc, C = CD-ROM

SECTION IV: PROJECT IMPLEMENTATION

A. Implementation Schedule

1. Planned starting date of the project (from proposal): .... ___/___/___

2. Actual starting date (date that staff actually started implementing the project activities) .... ___/___/___

3. If the actual starting date is different from the planned starting date, indicate the major factors that delayed implementation:

Factor(s):

4. To what extent were the original project activities implemented as planned? (circle one): .... Not at all 1 2 Moderately 3 4 Significantly 5

5. Rate the extent to which the project met its planned timelines/deadlines (circle one):

Not implemented 1
Behind schedule 2
On schedule 3
Ahead of schedule 4

6. What would be the ideal number of months to implement the project as planned ....#__________

B. Modifications to Original Proposal Plan

1. Indicate the major changes from the original project plan in each of the following areas (circle the appropriate letter(s) for each):

	Number or Amount		Implementation	
	more	less	delayed	changed
Objectives:				
a. Student	M	L	D	C
b. Staff development	M	L	D	C
c. Learning resources management	M	L	D	C
d. Other: ____________	M	L	D	C
Activities:				
e. Student	M	L	D	C
f. Staff development	M	L	D	C
g. Learning resources management	M	L	D	C
h. Other: ____________	M	L	D	C
Participants:				
i. Grade levels	M	L		
j. Number of students	M	L		
k. Number of teachers	M	L		
l. Other: ____________	M	L		
Purchases:				
m. Hardware	M	L	D	C
n. Software	M	L	D	C
o. Outside (consultant) resources	M	L	D	C
p. Other: ____________	M	L	D	C
Budget:				
q. Distribution by category type			D	C
r. In-kind support	M	L		C
s. Other: ____________	M	L	D	C

C. Staff Development and Technical Assistance

1. Rate the availability of the following resources (circle one for each item below):

Resources:	Used?			Usefulness				
				Not Useful		Moderately Useful		Very Useful
a. Administrative support and assistance	Y	N	n/a	1	2	3	4	5
b. Staff development opportunities	Y	N	n/a	1	2	3	4	5
c. Planning and implementation time	Y	N	n/a	1	2	3	4	5
d. Staff support and assistance	Y	N	n/a	1	2	3	4	5
e. Access to existing hardware at the school site	Y	N	n/a	1	2	3	4	5
f. Access to existing software/video programs at the school site	Y	N	n/a	1	2	3	4	5
g. Other (describe): ____________	Y	N	n/a	1	2	3	4	5
h. Other (describe): ____________	Y	N	n/a	1	2	3	4	5

2. Rate the extent to which the staff development activities matched the needs of the project (circle one):

Not at all		Moderately		Significantly
1	2	3	4	5

3. Indicate the major sources of formalized staff development (circle all that apply):

District 1
County office of education 2
CTP 3
Consultant (non-district employee) 4
ITV Agency 5
None available 6
Other (specify): ____________________ .. 7

5. Indicate the types of technical assistance received (circle all that apply):

Installation and operation of equipment 1
Software selection 2
Technology integration 3
Problem solving/trouble shooting 4
Evaluation assistance 5
Finding resources 6
Other (specify): ____________________ .. 7

D. Evaluation Procedures

1. Complete the items below as follows:

- Indicate the level of implementation for each evaluation activity by circling the appropriate letter:

N = Not initiated (but applicable)
P = Partially completed
C = Completed
n/a = Not Applicable

- If the activity was implemented, rate its usefulness by circling the appropriate number:

	Activity	Implementation				Usefulness				
						Not Useful		Moderately Useful		Very Useful
a.	Attended a CTP-sponsored Evaluation Workshop	N	P	C	n/a	1	2	3	4	5
b.	Prepared a formal (written) project evaluation plan	N	P	C	n/a	1	2	3	4	5
c.	Assigned staff to conduct the evaluation	N	P	C	n/a	1	2	3	4	5
d.	Conducted the evaluation as planned	N	P	C	n/a	1	2	3	4	5
e.	Modified the original evaluation plan	N	P	C	n/a	1	2	3	4	5
f.	Administered assessment instruments	N	P	C	n/a	1	2	3	4	5
g.	Prepared report for local use	N	P	C	n/a	1	2	3	4	5
h.	Other (describe): ____________________	N	P	C	n/a	1	2	3	4	5
i.	Other: ____________________ .	N	P	C	n/a	1	2	3	4	5

2. To what extent did the project evaluation produce information that documented the project's effectiveness (impact, outcomes, overall) (circle one):. ....

Not at all		Moderately		Significantly
1	2	3	4	5

3. Was an assessment of your project included in....(circle all that apply):

Self Study (school-based self assessment, part of SIP) 1
Program Quality Review (PQR) 2
WASC reviews 3
Other (describe): ____________________ 4
Site review assessment not conducted during project 5

If you circled any of choices 1 - 4 in Question 3, answer the following:

Briefly summarize the comments about the project included in the assessment (describe):

Which aspects of the project, if any, were cited as exemplars for your school (describe):

SECTION V: PROJECT SUPPORT RESOURCES

A. Services

1. If your program is and adoption or adaptation, indicate the model program(s) being adopted or adapted (circle all that apply):

Level I Model Tech. Schools		Level II Academic Tech. Model Projects	
Alhambra MTS	1	Project Links, Fullerton ESD	7
Cupertino/Fremont MTS Complex	2	Project Future, Ocean View ESD	8
Hueneme MTS	3	Carnegie Middle Sch. Hist-SS, San Juan USD	9
MTS, Bell Complex, LAUSD	4	Secondary Hist-SS, Santa Barbara HSD	10
Monterey MTS	5	Project TOPS, South San Francisco USD	11
Sacramento MTS	6	TASCII, Upland USD	12

2. If your project utilized the services of an ITV regional agency, indicate which agency was used (circle all that apply):

NITAC	1
KQED-ITV	2
Santa Clara County EMC-ITV	3
RETAC	4
KLCS (Los Angeles USD)	5
TOC-KOCE (Orange County)	6
San Diego County	7

3. To what extent were sufficient resources available to plan, develop and implement the project (circle one):

	Not at all		Moderately		Significantly
plan, develop and implement the project (circle one):	1	2	3	4	5

4. Complete the matrix below as follows:
   - Circle a letter to indicate the type(s) of services received from each source that you used.
   - Indicate the level of use by circling the appropriate number.
   - Rate the value of the service by circling the appropriate number.

	Type					Level of Use					Value				
Source of Service	Workshops	Individual assistance	Linking to other resources	Printed materials	Obtaining information	Never	Once	Two or three times	Intermittently	Regularly	Not useful	Slightly useful	Moderately useful	Useful	Very useful
Level I Model Technology School Project(s)	A	B	C	D	E	1	2	3	4	5	1	2	3	4	5
Level II Academic Model Tech. Projects(s)	A	B	C	D	E	1	2	3	4	5	1	2	3	4	5
CTP Consortium	A	B	C	D	E	1	2	3	4	5	1	2	3	4	5
ITV Agency	A	B	C	D	E	1	2	3	4	5	1	2	3	4	5
County Office of Education	A	B	C	D	E	1	2	3	4	5	1	2	3	4	5
District office assistance	A	B	C	D	E	1	2	3	4	5	1	2	3	4	5
Contract consultants	A	B	C	D	E	1	2	3	4	5	1	2	3	4	5
Technology Vendor(s)	A	B	C	D	E	1	2	3	4	5	1	2	3	4	5
Business/Industry	A	B	C	D	E	1	2	3	4	5	1	2	3	4	5
Teachers at project site	A	B	C	D	E	1	2	3	4	5	1	2	3	4	5
Other:____________________	A	B	C	D	E	1	2	3	4	5	1	2	3	4	5

B. California Technology Project Resources

The California Technology Project (CTP) consists of thirteen regional consortia that provide assistance to schools in developing and evaluating AB 1470 School-Based Grant projects as well as Technology Leadership Academies and other staff development.

1. Are you aware of the CTP and the services it provides? (circle one):

   Yes 1
   No 2

   If yes, answer the following questions.

2. Identify the CTP consortium that has sponsored activities in which you have participated (circle all that apply):

Central Valley Regional Consortium	1
Inland Technology Consortium	2
OCLA Technology Consortium	3
San Diego	4
El Camino Resource Council	5
San Gabriel Valley Educational Technology Consortium	6
Superior California Educational Technology Council (Super Tech)	7
North Coast Educational Technology Consortium	8
Sacramento Valley Regional Consortium	9
Central Coast	10
Bay Area Regional Consortium (BARC)	11
MOD Tech Consortium	12
Delta-Sierra Regional Consortium	13
Kern County	14

3. Complete the table below as follows:
   - Circle **Y** if you used the resource, **N** if you did not or **n/a** if you were not aware of it.
   - Rate the usefulness of the resource by circling the appropriate number for each item.

	CTP Resource	Used?			Usefulness				
					Not Useful		Moderately Useful		Very Useful
a.	AB 1470 Grant Preparation Workshops	Y	N	n/a	1	2	3	4	5
b	Technology Leadership Academy (TLA)	Y	N	n/a	1	2	3	4	5
c.	Video teleconferences	Y	N	n/a	1	2	3	4	5
d.	TRIE (CSUNet) electronic bulletin board	Y	N	n/a	1	2	3	4	5
e.	Regional meetings	Y	N	n/a	1	2	3	4	5
f.	Individual assistance (in person or phone)	Y	N	n/a	1	2	3	4	5
g.	Evaluation handbook	Y	N	n/a	1	2	3	4	5
h.	Other CTP Publications (specify):________________________	Y	N	n/a	1	2	3	4	5
i.	Other CTP Services (specify):________________________	Y	N	n/a	1	2	3	4	5

SECTION VI: FUNDING SUPPORT

A. Funding Sources

1. Funding sources for technology *before* 1990 (circle all that apply):

AB 803	1
SIP	2
Lottery	3
Chapter I	4
Chapter II	5
Restructuring (SB 1274)	6
Business/industry	7
High School Staff Development (SB 1882)	8
Other:________________________________	9

2. Total AB 1470 Grant funds received for the project: .... $__________

3. Indicate the value of in-kind and direct cash support (other than AB 1470) received for your project (write in the dollar amount for each):

> ***NOTE:** In-kind support and direct cash support is above and beyond the AB 1470 grant funding amount. Funding support can range from the district donating staff time to a business providing cash or equipment to the project.*

a. School site .... $________
b. School district .... $________
c. School Improvement Program .... $________
d. Chapter I .... $________
e. Chapter II .... $________
f. Level I Model Technology Project .... $________
g. Level II Model Technology Project .... $________
h. Proposition 98 supplemental funds .... $________
i. Mentor Teacher Project .... $________
j. Lottery .... $________
k. College or University .... $________
l. California state grants .... $________
m. Federal grants .... $________
n. Private foundation grants .... $________
o. Community donations .... $________
p. Business/industry .... $________
q. Other:______________________________ .... $________
r. Other:______________________________ .... $________

4. To what extent did AB 1470 grant funding help generate additional project support (in-kind and/or cash donations) (circle one): ....

Not at all		Moderately		Significantly
1	2	3	4	5

B. Project Expenditures

1. Fill in the total amount of money proposed in the AB 1470 grant proposal and the actual expenditures for each of the following project components:

Project Component	Proposed Expenditures	Actual Expenditures
Project Staff Time	$	$
Teacher Release Time and Substitute Salary		
Software, Videotapes, Laserdiscs, CD ROMs, etc.		
Printed Materials		
Staff Dev. Consultant(s)		
Evaluation Consultant(s)		
Other Consultant Services		
Conference/Course Expenses		
Hardware		
Other		

2. Indicate the total amount of matching funds for the project as indicated below (estimate if actual figures are not available):

> *NOTE: Each project was required to allocate a 20% matching amount. Of this 20%, up to one-half may be provided from in-kind contributions, with the remainder from local funds.*

Proposed		Actual	
Direct	In-Kind	Direct	In-Kind
$	$	$	$

3. To what extent did project expenditures exceed what was anticipated (circle one):.. 1 2 3 4 5

Not at all		Moderately		Significantly
1	2	3	4	5

C. Anticipated Future Funding

1. Indicate which of the following statements best describe the the project's continuance next year (circle as many as apply):

Project will terminate 1
Project will continue in part 2
Project will continue in total 3
Project will expand at school site...4
Project will expand to other schools in the district 5
Project will be incorporated into a district plan 6
Project will be considered for dissemination outside the district.......................7
Other (describe):_______________________________________ 8

2. If the project will continue (to any extent) please fill in the estimated amounts that you anticipate receiving from each of the following sources that apply:

a. School site .... $________
b. School district .... $________
c. School Improvement Program .... $________
d. Chapter I .... $________
e. Chapter II .... $________
f. Level I Model Technology Project .... $________
g. Level II Model Technology Project .... $________
h. Proposition 98 supplemental funds .... $________
i. Mentor Teacher Project .... $________
j. Lottery .... $________
k. College or University .... $________
l. California state grants .... $________
m. Federal grants .... $________
n. Private foundation grants .... $________
o. Community donations .... $________
p. Business/industry .... $________
q. Other:________________________________ .... $________
r. Other:________________________________ .... $________

SECTION VII: SUPPORTING AND IMPEDING FACTORS

A. School Factors

1. Indicate the extent to which the following school factors affected planning, implementation, and outcomes of the project. Some factors can be either positive or negative – i.e. low student attrition could support implementation while high student attrition could impede implementation. (circle one for each item)

	Greatly Impeded			No Effect			Greatly Supported
Student Factors							
a. Student attrition	-3	-2	-1	0	+1	+2	+3
b. Student academic proficiency	-3	-2	-1	0	+1	+2	+3
c. Student motivation	-3	-2	-1	0	+1	+2	+3
d. Student interest in technology use	-3	-2	-1	0	+1	+2	+3
Staff Factors							
e. Staff attrition	-3	-2	-1	0	+1	+2	+3
f. Staff morale	-3	-2	-1	0	+1	+2	+3
g. Staff interest in technology use	-3	-2	-1	0	+1	+2	+3
h. Support staff	-3	-2	-1	0	+1	+2	+3
i. Availability of substitutes	-3	-2	-1	0	+1	+2	+3
Administrative Factors							
j. District administrative leadership and interest	-3	-2	-1	0	+1	+2	+3
k. School administrative leadership and interest	-3	-2	-1	0	+1	+2	+3
General Factors							
l. Class size	-3	-2	-1	0	+1	+2	+3
m. Geographic location of school	-3	-2	-1	0	+1	+2	+3
n. Parent involvement and input	-3	-2	-1	0	+1	+2	+3
o. Prior technology use in the school	-3	-2	-1	0	+1	+2	+3
p. Physical environment (electrical wiring, furniture, space, etc.)	-3	-2	-1	0	+1	+2	+3
q. Community interest in technology	-3	-2	-1	0	+1	+2	+3
r. Other school programs	-3	-2	-1	0	+1	+2	+3
s. Other (describe):________________	-3	-2	-1	0	+1	+2	+3
t. Other:________________	-3	-2	-1	0	+1	+2	+3

2. Describe the school factors that most supported the project:

Description:

3. Describe the school factors that most impeded the project:

Description:

B. Project Factors

1. Indicate the extent to which the following project factors affected planning, implementation, and outcomes of the project. Some factors can be either positive or negative – i.e. adequate time for planning could support implementation while insufficient time for planning could impede implementation. (circle one for each item)

	Greatly Impeded			No Effect			Greatly Supported
Planning Factors							
a. Proposal preparation	-3	-2	-1	0	+1	+2	+3
b. Amount of time available for planning	-3	-2	-1	0	+1	+2	+3
c. Technology use planning process	-3	-2	-1	0	+1	+2	+3
d. Development of technology use plan	-3	-2	-1	0	+1	+2	+3
e. Adoption or adaptation of a "model" program	-3	-2	-1	0	+1	+2	+3
Staff Support Factors							
f. Technical support	-3	-2	-1	0	+1	+2	+3
g. Committee involvement	-3	-2	-1	0	+1	+2	+3
h. Administration support	-3	-2	-1	0	+1	+2	+3
i. Regional service support	-3	-2	-1	0	+1	+2	+3
j. Staff development	-3	-2	-1	0	+1	+2	+3
k. Project staff involvement	-3	-2	-1	0	+1	+2	+3
Funding Factors							
l. Overall funding level	-3	-2	-1	0	+1	+2	+3
m. District financial support	-3	-2	-1	0	+1	+2	+3
n. District in-kind support	-3	-2	-1	0	+1	+2	+3
o. State funding level	-3	-2	-1	0	+1	+2	+3
Evaluation Factors							
p. Evaluation of student outcomes	-3	-2	-1	0	+1	+2	+3
q. Evaluation of staff outcomes	-3	-2	-1	0	+1	+2	+3
Learning Resource Factors							
r. Access to equipment	-3	-2	-1	0	+1	+2	+3
s. Access to additional resources	-3	-2	-1	0	+1	+2	+3
t. Computer hardware	-3	-2	-1	0	+1	+2	+3
u. Computer software	-3	-2	-1	0	+1	+2	+3
v. Video equipment/ITV resources	-3	-2	-1	0	+1	+2	+3
w. Video programs	-3	-2	-1	0	+1	+2	+3
x. Vendor support	-3	-2	-1	0	+1	+2	+3
y. Other (describe): ____________________	-3	-2	-1	0	+1	+2	+3
z. Other: ____________________	-3	-2	-1	0	+1	+2	+3

2. Describe the project factors that most supported the project:

Description:

3. Describe the project factors that most impeded the project:

Description:

4. Indicate the adequacy of AB 1470 funding for the project (circle one):
   Not possible to implement with this amount of funding........................ 1
   Insufficient, but can be implemented........................ 2
   Adequate funding for implementation........................ 3

5. To what extent would this project have been developed and implemented if the AB 1470 funding had not been provided?

   Not at all........................1
   Partially........................2
   Fully Implemented........................3

SECTION VIII: PROJECT OUTCOMES

A. Student Outcomes

1. For each of the following categories, rate the observed change among students participating in instructional activities of this project (circle one for each item below; circle n/a if item does not relate to your project):

To what extent has the project INCREASED students'...	Level of Increase					
	Not at all		Moderately		Significantly	
a. Attendance/punctuality	1	2	3	4	5	n/a
b. Interest in technology use	1	2	3	4	5	n/a
c. Frequency of technology use	1	2	3	4	5	n/a
d. Proficiency in the use of technology	1	2	3	4	5	n/a
e. Classroom behavior and study skills	1	2	3	4	5	n/a
f. Problem-solving and higher order thinking skills	1	2	3	4	5	n/a
g. Knowledge and skills for subject areas emphasized by the project	1	2	3	4	5	n/a
h. Interest in school	1	2	3	4	5	n/a
i. Report card grades	1	2	3	4	5	n/a
j. Achievement test scores	1	2	3	4	5	n/a
k. Quality of student work completed	1	2	3	4	5	n/a
l. Student initiative	1	2	3	4	5	n/a
m. Other (describe):________________	1	2	3	4	5	n/a

2. For each area where 4 or 5 was circled in Question 1, elaborate on the student change and how the project contributed to the change.

Item letter from Question 1	Describe the student change and how the project contributed to the change

3. Considering the overall funding and effort of the project, indicate the statement below that best represents the project team's assessment of student benefits (circle one):
   - Benefits were clearly not worth the effort 1
   - Some benefits for students were attained but could have been accomplished in other more cost-effective ways 2
   - Moderate benefits for students were attained that probably could not have been attained without the project 3
   - Important benefits for students were attained and the effort was clearly worth it 4

B. Staff Outcomes

1. For each of the following categories, rate the observed change among teachers participating in instructional activities of the project (circle one for each item below; circle **n/a** if item does not relate to your project):

To what extent has the project INCREASED teacher ability to:	Not at all	Level of Increase	Moderately		Significantly	
a. Expand use of resources beyond textbook and other curriculum materials	1	2	3	4	5	n/a
b. Develop concepts/understanding not otherwise possible to teach	1	2	3	4	5	n/a
c. Encourage problem-solving and critical thinking	1	2	3	4	5	n/a
d. Support student-centered learning	1	2	3	4	5	n/a
e. Make teaching more interesting	1	2	3	4	5	n/a
f. Provide interactive experiences with colleagues	1	2	3	4	5	n/a
g. Provide interactive experiences with students	1	2	3	4	5	n/a
h. Provide simulation experiences	1	2	3	4	5	n/a
i. Gain confidence in their own technology use	1	2	3	4	5	n/a
j. Integrate technology into the curriculum	1	2	3	4	5	n/a
k. Evaluate an educational technology program	1	2	3	4	5	n/a
l. Other (describe):______________________	1	2	3	4	5	n/a

2. For each area where 4 or 5 was circled in Question 1, elaborate on the change and how the project contributed to the change.

Item letter from Question 1	Describe the change and how the project contributed to the change

3. Rate the degree to which the project led to increased staff usage of technology in the classroom (circle one): .... Not at all 1 2 Moderately 3 4 Significantly 5

4. Considering the overall funding and effort of the project, indicate the statement below that best represents the project team's assessment of teacher benefits (circle one):

Benefits were clearly not worth the effort	1
Some benefits for teachers were attained but could have been accomplished in other more cost-effective ways	2
Moderate benefits for teachers were attained that probably could not have been attained without the project	3
Important benefits for teachers were attained and the effort was clearly worth it	4

C. Program Outcomes

1. For each of the following categories, rate the observed school-wide changes attributable to the project (circle one for each item below; circle **n/a** if item does not relate to your project):

To what extent has the project INCREASED	Level of Increase					
	Not at all		Moderately		Significantly	
a. The management and coordination of learning resources	1	2	3	4	5	n/a
b. Staff familiarity with the California Curriculum Frameworks	1	2	3	4	5	n/a
c. Staff use of the California Curriculum Frameworks	1	2	3	4	5	n/a
d. Institutionalization of technology at the school site	1	2	3	4	5	n/a
e. Inclusion of technology in the School Improvement Plan (SIP) or School Development Plan (SB 1882)	1	2	3	4	5	n/a
f. Community/parent involvement with school activities	1	2	3	4	5	n/a
g. School/home communication	1	2	3	4	5	n/a
h. Business/industry partnerships	1	2	3	4	5	n/a

2. For each area where **4** or **5** was circled in Question 1, elaborate on the change and how the project contributed to the change.

Item letter from Question 1	Describe the change and how the project contributed to the change

D. Unanticipated Outcomes

What were the surprises or important learnings that you did not expect when you began this project? Describe the unanticipated outcomes or findings for each of the following categories:

a. Students:
b. Staff:
c. Program:
d. Other:

E. Promising Practices and Products

1. Were there any instructional procedures, practices, or products that warrant consideration for continuation and/or dissemination to other classrooms or schools? (circle one):

   Yes 1
   No 2

   If yes, use the space below to describe specific promising products, practices and/or processes that directly resulted from this project.

Products:

Practices:

Processes:

1. Would you be willing to share the items listed above via the TRIE electronic bulletin board or other means? (circle one):

   Yes 1
   No 2

SECTION IX. RECOMMENDATIONS

Review all information gathered with this inventory (as well as all other available information relevant to the project) and use the space below to make one or more recommendations regarding the future of the project: